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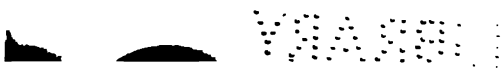
SECOND EDITION.

DANBURY, CONNECTICUT,
THE VASS CHEMICAL COMPANY,

1898.

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1696

THIALION

Is a new drug for the treatment of certain disease conditions heretofore intractable. It is a new chemical salt of lithia and a laxative alkali, in other words, such a combination results in a laxative salt of lithia.

Physical Properties.—It is a granular salt, of a uniform light brownish color, having a faint acid reaction. It is not unpleasant to the taste, though very slightly bitter. It is non-hygroscopic, slightly soluble in cold water, but freely so in hot water, coloring the water a light yellowish brown.

PHYSIOLOGICAL ACTION.

Circulation.—In therapeutic doses, Thialion produces a slight fall in the pulse rate and a rise in arterial pressure. This is probably due to an impression produced upon the vagi, and is of great therapeutic importance. The rise of arterial pressure is almost undoubtedly caused by the action of the drug upon the vaso-motor nerves. In this it resembles the salts of potassium, but unlike them, it never causes depression of the cardiac muscle, and hence is always safe from a therapeutic standpoint.

Muscular and Nervous Systems.—Thialion, by preventing the deposition of uric acid in the tissues, influences indirectly, the muscular and nervous systems, improving the general muscular tone and stimulating the nerves, thus producing buoyancy and cheerfulness, where, hitherto, had existed depression, listlessness and general debility.

The Intestinal Tract.—Thialion is a valuable digestive stimulant, increasing the peptic power of the gastric juice, and also its secretion. The increase in flow of the gastric juice is due to a direct stimulation of the glands by the drug, and is of great therapeutic importance.

It markedly influences the *liver*, stimulating its physiological functions and increasing the fluidity of the bile, thus proving of great

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value in hepatic congestion and in the treatment of gall-stones. By preventing the bile from becoming viscid it effectually stops the formation of biliary calculi. The flow of bile is greatly increased. Upon the *intestine* Thialion exercises a very marked action. It increases peristalsis notably, and by reason of its hydragogue action, produces semi-fluid evacuations, without pain or other unpleasant effect. In ordinary doses its action is gently laxative, the stools being well formed, but of a soft, mushy consistence. Larger doses will produce free catharsis, but with none of the debilitating after-effects so common to remedies of this class.

The flow of bile into the intestine is greatly increased and thus the hepatic congestion so common in cases of constipation is at once relieved.

Thialion does not produce tenesmus nor favor a chronic torpidity of the bowel.

Urinary Organs.— The urinary organs, especially the kidney, are very sensitive to the action of Thialion. It is a powerful diuretic and solvent of uric acid and has no equal along these lines. Prof. H. C. Wood in his excellent treatise entitled "Therapeutics: Its Principles and Practice," gives the following indications for the use of diuretics:

1. To maintain the action of the kidneys.
2. To evacuate fluid.
3. To soothe and diminish irritation of the genito-urinary organs and
4. To alter the urinary secretion so as to prevent the deposition of calculous material.

Thialion meets all these indications. It maintains the action of the kidneys by gently stimulating the excretory functions; it evacuates fluid, by virtue of its hydragogue properties; it soothes and diminishes irritation of the inflamed mucous membranes of the genito-urinary tract by rendering the urine alkaline and non-irritating, and lastly, and most important of all, it renders soluble, and therefore, easily excreted, uric acid and calculous material. It, like lithium, and because of the large quantity of lithia contained in it, unites with uric acid and forms a urate of lithium, the most soluble salt formed with uric acid, a salt much more soluble than is formed with either

potassium or sodium. Not only will Thialion dissolve uric acid, but it will actually, as proven by experiment, soften and disintegrate uric acid calculi, a result hitherto impossible by any therapeutic means at our command.

THERAPEUTICS.

Thialion in the Treatment of Rheumatism, Gout, and the Uric Acid Diathesis or Lithæmia.—Rheumatism, gout, and the uric acid diathesis are all allied to each other in that they are due to a deposition of uric acid in the joints and tissues and an accumulation of urates in the blood. It should be distinctly understood that these conditions, and especially the uric acid diathesis or lithæmia, are not due, in the majority of cases, to an over production of urates, but rather to a lessened excretion of them, i. e., to an error of excretion, rather than an error of secretion. Uric acid does not exist in the body as such, but always in combination, as a urate. Normally uric acid exists as quadriurates, and it is this form only which exists in normal urine. When we speak of the amorphous urates of urine we imply a mixture of the quadriurates of sodium, potassium and ammonium. As, then, uric acid exists normally in the body as a quadriurate, any departure from this is pathological, and this departure takes place in two directions, either the decomposition of the quadriurate, the uric acid being set free, thus favoring the formation of gravel and calculus, or the evolution of the quadriurate into the more stable biurate, which is deposited in the tissues, causing gout, etc. It is this compound which is found deposited in gouty articulations.

William Roberts in his most excellent article upon gout in "Allbuts' System of Medicine," Vol. ix, p. 170, says:

"From these conditions it may be inferred that in the normal state uric acid is primarily taken up in the system as a quadriurate; that it circulates in the blood as a quadriurate; and that it is finally voided with the urine as a quadriurate. In perfect health the elimination of the quadriurate proceeds with sufficient speed and completeness to prevent any undue detention or any accumulation of it in the blood. But in the gouty state this tranquil process is interrupted either from defective action of the kidneys or from excessive introduction of urates into the circulation, and the quadriurate lingers unduly in the blood and accumulates therein. The detained quadriurate, circulating in a medium which is rich in sodium carbonate, gradually takes up an additional atom of base, and is thereby transformed into biurate."

This phenomena, i. e., the formation of the biurate, as is thus shown, is not due to an excessive production of uric acid or quadri-

urates, but to a slowing of the excretory functions, being, in fact, an error of excretion. The quadriurate which is easily excreted is allowed to remain too long in the blood, and the biurate is formed, which is more insoluble and is deposited in the tissues and articulations.

James Tyson in a paper entitled *The Treatment of Gout*, "Transactions Pan-American Medical Congress," Washington, 1893, Vol. 1, p. 166, says:

"Now, if we turn to another modern observer, Alexander Haig, who used also Salkowski's method for the determination of uric acid and whose work seems to have been done with unusual care, we find his studies entirely confirm the original results of Garrod. Haig claims that there is 'almost never' an excessive formation of uric acid at a time and that its accumulation in the blood and body at any time is generally due to retention or failure of excretion; that uric acid is on the whole continuously formed in the proportion of 1 to 33 of urea. In certain states of the blood constituted essentially by increased alkalinity, uric acid is held in solution in larger quantity constituting uric acidæmia. At such times, too, it is eliminated in increased quantity by the urine by which it is also readily held in solution because of the alkalinity of this secretion.

In opposite states of the blood the uric acid is driven out of this fluid and deposited in the tissues of the joints. Haig holds also that these opposite conditions, which are fluctuations in secretion only, can be artificially produced by drugs, food, temperature and other conditions influencing the reaction of the blood. Thus alkaline foods and warm weather favor the former, while acids and cold weather favor the latter and it is under influences like these that uric acid in the shape of urates is stored up in the body. He further says that the blood never becomes loaded with uric acid except as the result of previous imperfect excretion and such imperfect excretion or retention is sufficient to account for the largest quantities he has ever seen in the human body and that there is no need of excessive formation as an explanation. Further, that he does not assert that excessive formation never occurs, only that he has never met any conclusive proof of its occurrence, while all the other phenomena of disease can be explained without postulating the excessive formation of a single grain.

The result is, however, the same. Whether there be diminished excretion or increased formation, or both, there is an accumulation of uric acid in the blood, which is responsible first for certain premonitory symptoms of gout and second for certain local symptoms. The latter are of an inflammatory nature and consist essentially in pain, swelling and redness of the joints, preferably of the smaller ones and especially of the metatarso phalangeal articulation of the great toe, more frequently, perhaps, of the left great toe.

The uric acid being deposited in the blood and tissues causes the symptoms associated with rheumatism, gout, and the uric acid diathesis. Not speaking of the well-known symptoms accompanying the two first mentioned diseases, those occurring in the uric acid, gouty or lithæmic diathesis are of greatest importance.

The symptoms of the uric acid diathesis, excepting gout and rheumatism, are protean in number and variety and are exceedingly hard to classify. Among those affecting the digestive system are anorexia, discomfort after eating, flatulence, pyrosis and persistent

constipation; of the urinary organs, a sense of heat and burning after micturition, frequent micturition, and pain over the region of the kidneys; the pulse may be irregular and intermittent, there is increased arterial tension and sometimes attacks of palpitation, and there is generally present great depression of spirits, and a general sense of weariness and inaptitude for effort of any kind. The sleep is restless and on awakening in the morning the patient feels as tired or even more so, than on retiring.

The symptoms arising from the nervous system are of much interest, comprising vertigo, tinnitus aurium, muscular pains and cramps, headache, neuralgia, affecting various parts of the body, spinal irritation, vaso-motor disturbances, insomnia, general nervousness and fevers. Hysterical and even epileptiform symptoms have been described by some authorities, and delusions are not uncommon.

One or many of these symptoms may be associated in a single case, but in no one case will they all occur. Migraine, with its peculiar symptomatology is probably an expression of the uric acid diathesis, and from repeated examinations of the urine after attacks of migraine this inference is strengthened, for in a vast majority of instances the urine has shown an excess of uric acid.

The symptoms enumerated are generally seen either in those leading an indolent, luxurious life, little out-door exercise being indulged in, or in those whose occupation keeps them within doors and subjects them to more or less mental strain and worry. In fact, the hypochondriacal or those tending toward that temperament are most subject to the uric acid diathesis.

The urine of those suffering from this "diathesis" possesses great clinical importance, and in every suspected case should be most carefully examined. It is always highly acid, of a dark golden color and in a large proportion of cases contains a sediment of uric acid crystals.

In a large proportion of cases, however, the uric acid is not deposited as uric acid crystals in the urine, but exists in combination with sodium and ammonium, forming acid urates. When it is separated from its bases it crystallizes in rhombic or prismatic crystals, of a red color and it is these which form the red granules seen in some urines. Not every urine showing this sedimentation contains uric acid in excess, for it may be due to a decreased solvent power of the urine, rather than to an increased amount of uric acid

almost 1,000 parts of uric acid. This property renders it of value in diminishing the deposit of uric acid formed in gout, and in dissolving uric acid calculi."

T. Lauder Brunton, M. D., D. Sc., F. R. S., in his "Text-Book of Pharmacology, Therapeutics and Materia Medica," p. 631, in writing upon the uses of lithium, says:

"The urates of lithium being much more soluble than those of either potassium or sodium, lithia is often employed in preference to these other alkalies in gout. It is given internally in order to aid in the elimination of uric acid by the kidneys, to prevent the gouty paroxysm and to lessen the acidity of the urine, to prevent the deposit of uric acid gravel or calculi in the kidneys or bladder and also to aid in their solution when already formed. It is applied locally to parts affected with gouty inflammation, in order to aid in the solution and absorption of the urate of sodium in the tissues. For this purpose it may be applied to stiff joints and chalk-stones, whether covered by the skin or already laid bare by ulceration. A solution of lithia, five grains to the ounce, is kept constantly applied to the part for several weeks together."

Edward Curtis, M. D., "Reference Handbook of the Medical Sciences," Vol. iv, p. 511, says, regarding lithium:

"As lithium is chemically closely allied to potassium, so its salts exert practically the same kind of physiological influence as the corresponding salts of potassium. The only substantial differences are, *first*, the purely chemical one, that basic lithia forms with *uric acid* a salt much more soluble than the corresponding potassic compound and *secondly*, that clinically, in lithæmia and gout, speedier relief seems to follow from medication with salts of lithium than with those of potassium."

Frederick T. Robert's article upon *Gout and Lithæmia*. "Quain's Dictionary of Medicine," Vol. I, p. 760. Discussing the treatment of gout and the uric acid diathesis he says:

"There can be no doubt but that the judicious use of certain medicines may assist materially in warding off or mitigating the gouty condition and in preventing the occurrence of acute paroxysms. Those which are specially called for in cases of established chronic gout will be presently considered. In the meantime, it may be stated that the digestive functions require particular attention and medicines which help these functions are often of the greatest service, if they should be disordered. A course of alkalies or acids, according to the indications in each case, may prove most serviceable, combined with some simple, bitter infusion or tincture. Certain alkalies and alkaline earths are also valuable on account of their power in promoting elimination of lithic acid, by forming soluble salts with this acid. The careful observations of Dr. Haig have shown that alkalies increase the secretion of uric acid, while acids decidedly diminish it. The alkalies which are most useful are salts of lithium, the urate of lithium being the most soluble of all."

Robert T. Edes, A. B., M. D., (Harvard) in his work, "Therapeutic Hand-Book of the United States Pharmacopœia," p. 186, says:

"It (lithium) is a powerful diuretic and has a special relation to uric acid, with which it forms soluble salts."

Stille, Maisch and Caspari, (*The National Dispensatory*), 1894, p. 992, say:

"*Chemical Action*.—When a calculus composed of uric acid and oxalate of lime is suspended in a warm solution of lithium carbonate, it loses sensibly in weight; and when a portion of bone infiltrated with gouty concretions is placed in a solution of the salt, after two or three days the whole of the deposit disappears. In fact, the urate of lithium is the most soluble salt formed with uric acid. Garrod (*Times and Gaz.*, June,

1883, p. 691) and Jahns (*Amer. Jour. of Med. Sci.*, Jan., 1884, p. 262) show that, in laboratory experiments at least, lithium carbonate is a much better solvent of uric acid concretions than sodium or magnesium salts.

Action and Uses.—Opinions are by no means uniform in regard to the value of lithium carbonate in removing *uric acid deposits* and *gouty concretions*. On the one hand, it is asserted that when patients are voiding uric acid gravel it causes the deposit to diminish or to cease altogether, and that in *gout* it often diminishes the frequency of the attacks. At the same time it is stated to be powerfully diuretic. Others, again, declare that it is suitable only for the treatment of chronic gout, that the daily dose of it should be small and that its good effects become apparent only after several weeks' use."

A. A. Stevens, A. M., M. D., "A Manual of Therapeutics, Therapeutics of Lithium," p. 181, he says:

"The salts of lithium are of special value in promoting the solution of uric acid. Since lithium unites with uric acid to form a more soluble salt than does either sodium or potassium, it will be found preferable in the treatment of all affections characterized by an excess of uric acid in the blood. In *gout*, *lithemia*, *chronic rheumatism*, and *nephrolithiasis* the lithium salts accomplish much good. There are many natural lithia waters in the market, but the amount of the metal which they contain is so small that the good effects attributed to them are no doubt due to the increased diuresis which the water itself produces. A combination of lithium carbonate and sodium arsenate has been highly extolled in the treatment of *diabetes mellitus*; while the results are often disappointing, they are sometimes excellent when the disease is associated with the gouty diathesis."

H. C. Wood, M. D., LL. D., in his work, "Therapeutics; Its Principles and Practice," p. 757, says:

"We have but little accurate knowledge of the physiological action of lithia, but it probably closely resembles potash in its effects upon the system. In twenty-grain doses I have seen it apparently produce severe general prostration, amounting almost to general paralysis, in a feeble adult female; but I have given it very largely to other patients without inducing any constitutional symptoms. It is eliminated by the kidneys, rendering the urine alkaline.

Therapeutics.—According to the experiments of Dr. Ure and of Dr. Garrod, solutions of the lithia salts have the power of dissolving uric acid and the urates; and the drug was strongly recommended by Dr. Garrod in *uric acid diathesis* and in *chronic gout*, given in doses of three or four grains three times a day. The drug was extensively employed, but fell into disrepute until recently, when its claims have been revived, especially by Professor Ditterich (*Schmidt's Jahrbücher*, Bd. cli. p. 270), it is very generally given in too large dose. In my own experience, given as prescribed by Dr. Garrod for a length of time, it has appeared to do great good in some cases of chronic gout. Dr. Martineau, of Paris, affirms that he has obtained very remarkable results in the treatment of *diabetes mellitus* by the use of a solution of lithium carbonate and sodium arsenate. There is a form of diabetes closely connected with the gouty diathesis and in these cases this *arsenical solution of lithium* will probably be of service. Dr. E. Duche (*Bull. de la Soc. Méd. de l'Yonne*, 25-27, 1884-86), affirms that the prolonged local application of lithia salts is of very great use in the treatment of gouty joints."

Samuel O. L. Potter, A. M., M. D., M. R. C. P., "Hand Book of Materia Medica, Pharmacy and Therapeutics," p. 268, speaking of lithium, says:

"The high saturating power of this metal makes its salts more alkaline than those of potassium, sodium or calcium, hence more efficient in alkalizing the urine. The

THE UNITED STATES OF AMERICA
DO hereby certify that the within and foregoing is a true and correct copy of the original as the same appears in the records of the Department of the Interior, Bureau of Land Management, at Washington, D. C.

Witness my hand and the seal of the Department of the Interior, at Washington, D. C., this 1st day of January, 1900.

Very truly yours,
J. M. McKIM,
Acting Secretary of the Interior.

Approved: _____
Special Agent in Charge.

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THIS CERTIFICATE IS VALID FOR THE PURPOSES OF THE ACT OF MARCH 3, 1879, CHAP. 25, § 1, AND THE ACT OF MARCH 3, 1891, CHAP. 18, § 1, AND THE ACT OF MARCH 3, 1899, CHAP. 18, § 1, AND THE ACT OF MARCH 3, 1909, CHAP. 18, § 1.

Given at Washington, D. C., this 1st day of January, 1900.
J. M. McKIM,
Acting Secretary of the Interior.

"The salts of lithia are actively diuretic, powerful solvents of uric acid and generally they tend to render the urine neutral. Taken for a length of time in a dilute form, they tend to prevent paroxysms of gout in chronic cases and cause solution and absorption of chalky matter. They certainly lessen the deposits of uric acid in the urine and are of service both in the acute and chronic forms of gout."

Dr. A. Trousseau, Professor of Therapeutics in the Faculty of Medicine, of Paris, in his work on "Therapeutics," ninth edition, p. 203, says:

"Garrod has used lithia several years in cases of uric acid diathesis, connected with gravel and in chronic gout and has always obtained the most satisfactory results. In persons who pass uric acid gravel it has marked influence in lessening the amount of the deposits or arresting them entirely. As there has never been any bad consequences from its use, I consider this remedy the most suitable to drive away attacks of gout and improve the patient's condition."

Doctors Taylor and Waugh in their "Manual of Treatment," published in Philadelphia, in 1887, on p. 206, state:

"That the lithia salts have better effect, without the disadvantages of the ordinary alkaline waters."

Professor Hobart Amory Hare, M. D., B. Sc., in the second edition of his work, published by Lea Brothers & Co., of Philadelphia, entitled, "A Text-Book of Practical Therapeutics," p. 211, says:

"Lithia is used in *gout*, and *rheumatoid arthritis*, for the purpose of entering into combination with the uric acid in the body to form soluble urates, and prevent deposits in the joints. It is very useful when it is desired to render the urine alkaline. In cases of *diabetes*, depending upon a gouty taint, remarkable results were often obtained from its use."

Professor John V. Shoemaker, A. M., M. D., LL. D., of Philadelphia, in his work on "Materia Medica and Therapeutics," p. 553, third edition, says:

"In the uric acid diathesis, the several salts of lithium are used with great advantage, even when chalky deposits exist. It has also been stated that they can dissolve uric acid calculi in the urinary passages and bladder. In gouty subjects, especially those suffering with indigestion, lithium salt renders good service, while in gravel it also affords prompt relief."

The salts of lithium have likewise been advantageously employed in chronic and muscular rheumatism."

Professor Dujardin Beaumetz, of Paris, on p. 282, in his work published by Geo. S. Davis, entitled, "Clinical Therapeutics," in speaking of the treatment of gout, says:

"All of the alkalies may be employed, soda as well as potassa, but the one that seems to be better than all of the others, is lithia."

Professor A. Robert Bartholow, A. M., M. D., LL. D., on p. 213, of the sixth edition of his work, published by D. Appleton & Co., entitled, "A Practical Treatise on Materia Medica and Therapeutics," says:

"The subacute and chronic cases, and the so-called *rheumatic gout*, are the forms of the disease in which the lithium salts are the most serviceable."

In the *uric acid diathesis*, in renal calculi, composed of uric acid, and in *irritable bladder*, from excess of acid in the urine, the salts of lithium are very serviceable. In the case of renal calculi, a very protracted use of a well diluted solution is necessary."

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1862. It contains a report on the state of the Union and the progress of the war.

2. The second part of the document is a report from the Secretary of the War Department, dated January 10, 1862. It contains a detailed account of the military operations and the state of the army.

3. The third part of the document is a report from the Secretary of the Navy Department, dated January 15, 1862. It contains a detailed account of the naval operations and the state of the navy.

4. The fourth part of the document is a report from the Secretary of the Department of the Interior, dated January 20, 1862. It contains a detailed account of the land and mineral resources of the United States.

5. The fifth part of the document is a report from the Secretary of the Department of the Treasury, dated January 25, 1862. It contains a detailed account of the financial state of the United States.

6. The sixth part of the document is a report from the Secretary of the Department of Justice, dated February 1, 1862. It contains a detailed account of the state of the law and the administration of justice.

7. The seventh part of the document is a report from the Secretary of the Department of Education, dated February 5, 1862. It contains a detailed account of the state of the education system in the United States.

icteroid hue to the skin and conjunctiva. If untreated, the attack, after continuing for two or three days gradually wears off and the sufferer regains his usual health, or there follows a more or less chronic condition of hepatic torpor, evidenced by sallow skin, yellow conjunctiva, lassitude, nervous irritability and constipation.

Familiar to every practitioner is the countenance of the "bilious" patient, his sallow, yellowish skin, dull eye, sodden tongue covered with a thick, yellowish fur, offensive breath and complaints of nausea, lack of appetite and constipation, alternating with attacks of diarrhœa. All these clinical phenomena are undoubtedly due to inactivity of the liver, *i. e.*, an improper performance of its physiological functions.

In the treatment of these cases Thialion is almost a specific. It acts indirectly by cleaning out the bowel and stimulating the excretory apparatus, and directly by stimulating the liver and producing a flow of liquid bile. Its action in increasing the fluidity of the bile is very marked, and its use is thus indicated in gall-stone cases and in those predisposed to attacks of biliary colic. By rendering the bile less viscid, it effectually prevents the formation of biliary calculi, and in addition to this, Thialion is a very valuable hepatic stimulant. In cases suffering from biliary colic, and especially in all cases of hepatic torpor, Thialion will be found to be almost a specific. As showing the close relationship existing between diseases of the liver and the uric acid diathesis the following quotation is valuable:

Regarding the relation of the liver to lithæmia, **Ward and Sir Richard Quain**, in their article upon *Functional Diseases of the Liver*, "Quain's Dictionary of Medicine," Vol. 1, p. 1138, say:

"Gout, whether openly manifested, latent or irregular, is associated with the symptoms just mentioned. It is one of the results of lithæmia and thus has its origin very frequently in faulty hepatic function.

Urinary calculi are also a result of lithæmia, at all events those which consist of lithic acid or its salts, which, as we know, are the most frequent forms. Thus, also, it is that the formation of these calculi should be prevented by remedies and a *régime* directed to the liver rather than to the kidneys.

Biliary calculi are likewise a result of functional hepatic derangement and are frequently associated with a gouty habit of body and with lithic acid deposits and calculi.

Lithæmia predisposes to local inflammations. Individuals who are subject to deposits of lithic acid and lithates are more liable than others to local inflammations in a severe form. In reference to this fact, Dr. Murchison made the practical observation that in such persons the lithates cease to be eliminated on the advent of a local inflammation or ordinary febrile catarrh, to be again discharged freely on the subsidence of the pyrexia. In such cases, he added, the retention of lithates in the system has probably determined the attack.

Certain diseases of the skin, such as erythema, eczema, herpes, psoriasis, lichen and urticaria, are unquestionably often induced and maintained by lithæmia resulting from hepatic derangement."

Thialion in Diseases of the Stomach and Intestines.—Thialion is a powerful stimulant to the gastric functions, producing, when ingested, a profuse flow of gastric juice, and an increased supply of

hydrochloric acid. It is thus indicated in all cases of acute or chronic dyspepsia, and in the chronic form is the ideal alkaline drink. In reference to the use of alkalies in chronic gastritis,

Osler, in his "Principles and Practice of Medicine," p. 358, under Chronic Gastritis, says:

"When there is an insuperable objection to lavage, a substitute may be used in the form of warm alkaline drinks, taken slowly in the early morning or the last thing at night. Lithia combined with a laxative alkali is especially serviceable."

Again,

William Cadge in his article upon *Uric Acid Diathesis*, "Quain's Dictionary of Medicine," Vol. II, p. 1130, says:

"For that condition of indigestion and urinary irritation in which the chief feature is the copious deposit of uric acid and the urates, alkaline remedies, such as the lithium salts, afford the best and quickest relief; they produce an alkaline condition of the urine and a complete solution of the deposit for the time."

In constipation, Thialion is indeed a specific. By its hydragogue action, together with its stimulating power upon intestinal peristalsis, it produces soft, mushy stools, which are easily voided, and accompanied by no pain or other unpleasant symptoms. A teaspoonful dose of Thialion, or more if necessary, taken in hot water early in the morning, will effectively cleanse the bowel in a few hours, and leave no weakening or injurious effect, but instead, a sense of buoyancy and lightheartedness, which is absolutely astonishing. In all cases of acute or chronic constipation, Thialion is a specific.

Thialion in Diseases of the Bladder.—From the fact that Thialion renders the urine neutral or slightly alkaline, and holds in solution the urates and uric acid, thus preventing their deposition, it is especially useful in all irritable and inflammatory conditions of the bladder. In cystitis it is of the greatest value in soothing and healing the inflamed mucous membrane, preventing the deposit of urates or uric acid, and rendering the urine mild and unirritating. For the same reasons, Thialion is indicated in acute and chronic gonorrhoea, where it is essential that the urine be as little irritating as possible, thus preventing pain and hastening the return of the mucous membrane to its normal condition.

Thialion in Malaria.—A peculiar fact discovered during experimentation with Thialion is that when administered along with quinine, the quinine achieves greater therapeutic results than when given alone. Two grains of quinine taken shortly after a dose of Thialion will produce the physiological action of four to six grains given alone. This property of Thialion in intensifying the action of quinine is probably due to the cleansing and stimulating effect of the drug upon the liver. In all cases of malaria, if it be desired to secure rapid and sure results from quinine, Thialion should be prescribed in conjunction, and in this one thing alone, the new salt of lithia stands unrivalled in usefulness and therapeutic virtue.

CHRONIC LEAD POISONING.

In a very able paper written by Dr. W. C. Wile and published in the June number of the *International Journal of Surgery*, 1898, (see page 33) entitled, "Three Cases of Lead Poisoning and Their Treatment," calls attention to the value of Thialion in this disease. His conclusions are as follows: "There can be no question of the value of this treatment (Thialion) in these cases and while I am not able to explain the *modus operandi*, still, I do know that three cures were effected where heretofore the utmost difficulty had been experienced in getting anything like such results. If we remove the intestinal obstruction we do a lot towards relieving our patient, but if we clear out of the system all of the lead, we cure him. I believe that Thialion in these cases forms with the lead a soluble salt which is speedily carried out of the system just the same as I believe it combines with the uric acid in the system, forming a soluble salt which is easily removed by the ordinary operations of the functions of the body."

LIQUOR HABIT.

Dr. F. E. Hale, in an able article published in the *Medical Mirror*, of St. Louis, June, 1898, entitled, "The Treatment of the Uric Acid Diathesis," (see page 36) notes the effect of Thialion on the drink habit. The patient was a hard drinker, suffering from acute cystitis and the medicine was given for this trouble. In a week's time the patient accused the doctor of giving him something to kill the desire for drink, saying: "I have had actually no desire for alcoholic stimulants since I took the medicine (Thialion)." While this is unconfirmed by other experience, it quite naturally leads one to anticipate good results in this class of cases.

OBESITY.

It must not be understood that Thialion is an "antifat" for it is not, still the patient who suffers from all of the ills of the uric acid diathesis is generally fat, in fact we think we are safe in saying, that all fat people suffer more or less from an excess of uric acid. This being the case, it has been noted by clinicians, that fat people on undergoing the Thialion treatment, lose flesh. In some instances re-

ported, the girth has been reduced four inches inside of three weeks after commencing taking it. Aside from the removal of the fat by natural means, it takes a great load off the mind of the patient, producing an exhilaration which makes them think of the health, happiness and sleep of childhood.

ACUTE ALCOHOLISM.

In those cases of acute alcoholism, following excessive drinking, Thialion exercises a very happy influence. It seems to soothe the excited nervous system, relieves at once the acid condition of the stomach, which is such an annoying feature after a debauch, cleans out the bowels thoroughly, while at the same time relieving the engorged circulation, unloading the bile into the intestines and removing the terrible headache.

If the bowels are constipated, a teaspoonful should be taken in a teacup of hot water (just as hot as it can be) and repeated every two or three hours until they move thoroughly, then a teaspoonful in the same way for two or three mornings will suffice. These cases are oftentimes serious enough to run with distressing symptoms for two or three days, while by the Thialion treatment the cure is effected at once.

KIDNEY PAIN.

In those cases where gravel stones have been passed or small ones still remain in the kidney, there is always a great amount of pain in that organ and the back. This pain is characteristic and is described as a dragging, grinding pain by those who suffer from it. It is present in other forms of kidney disease, but is more persistent and irritating in the cases of uric acid formation or the diseased conditions which follow the passage of small stones. This pain is aggravated by work or labor of any kind, is increased by worry or damp and cold weather.

In this class of cases Thialion does its work in the most satisfactory manner. In many of them the first dose relieves, in the very worst cases in three days the pain goes, and the relief experienced is so great as to call for expressions of gratitude from the patient.

THIALION AS A PROPHYLACTIC AGAINST APOPLEXY.

Apoplexy is almost invariably due to disease of the cerebral arteries, the most common diseased condition being a periarteritis, miliary aneurisms being formed, and it is the rupture of these which produces apoplexy. The next most common condition is endarteritis of the cerebral vessels. The natural tendency of the blood-vessels in advanced life, after the fiftieth year, to degeneration, renders apoplexy a condition to which every one in advanced life is liable, and especially is this true of those who have used alcoholic liquors freely and those who have done or are doing, heavy muscular work. The most favorable subjects are those having a stout plethoric body, with a short neck and lessened respiratory power. Such patients are very liable to cerebral hemorrhage upon the slightest exertion above what is normal to them. Arterio-sclerosis being the pathological change upon which cerebral hemorrhage or apoplexy is dependent, anything which will hinder the development of that change will prevent apoplexy. As a prophylactic in this disease, Thialion is without a peer. Arterio-sclerosis may be produced by alcohol, lead, gout or the gouty diathesis, overeating and renal disease.

Thialion is almost a specific in alcoholism, destroying the taste for it (Dr. Hale's article, page 36) and cleansing the system thoroughly of all injurious matters due to its inhibition, thus indirectly preventing arterio-sclerosis.

In lead poisoning, another cause of arterio-sclerosis, Thialion exerts a remarkable effect in removing the poison from the system, as noted by William C. Wile, M. D., LL. D., in an article in *The International Journal of Surgery* for June, 1898. (See page 33.)

In the gouty diathesis, one of the most common and insidious causes of arterio-sclerosis, Thialion, as has already been stated, is a specific of the greatest value, and in renal disease its use being followed by increased diuresis, thus relieving the blood-vessels of poisonous material, it again indirectly prevents arterio-sclerosis.

To sum up, then, we have in Thialion a most valuable prophylactic against apoplexy as it prevents the arterio-sclerosis which lies at the bottom of all cases of cerebral hemorrhage.

NEUROTIC LITHÆMIA.

Though the authorities in the text-books are silent on this subject, yet the carefully written paper by Dr. Craig published in the July, 1898, issue of the *Southern Practitioner*, (see page 42) shows conclusively that there are nervous diseases which will not yield to any other treatment, and which are undoubtedly due to an excess of uric acid in the system. This paper opens a comparatively new field for investigation and presents in a most favorable light, the curative action of Thialion in this class of cases.

TEST FOR URIC ACID.

We have often wished that a simple test might be found for uric acid, and Dr. L. H. Watson, of Chicago, Ill., in a paper entitled "Uricacidæmia," published in the *New England Medical Monthly* for July, 1898 (see page 44), gives the following, which he takes from the celebrated author, Haig, which will be found very convenient and effective.

"Take 200 c. c. of urine and add to it 10 c. c. of hydrochloric acid; let it stand 24 hours in a cool place. Collect the precipitated uric acid crystals on a filter, and wash with cold, distilled water. Dry the filter and uric acid crystals and weigh—weight of filter being previously known; by subtracting weight of filter, the result will be the weight of uric acid in 200 c. c. of urine. This is not particularly difficult and approximatingly accurate. Although the existence of any abundant deposit in the urine, of urates, does not warrant the inference that uric acid is excreted in excess, there is no doubt that there are certain processes going on in the system, the chief evidence of which is such an increase in the elimination of uric acid and through this of urates, that we can establish the condition," says Von Jaksch. In the headache of uric acid, there is often a large increase of these urates, accompanied by a slow pulse and high arterial tension.

IRREGULAR GOUT.

Many symptoms which are difficult of relieving or accounting for except on the grounds of excess of uric acid in the blood, are shown by Dr. James S. Kennedy, of Chambersburg, Pa., in an able paper published in *Gaillard's Medical Monthly*, for September, 1898,

to be irregular gout. The doctor goes into the matter at length, citing cases cured by thialion (see page 50). The subject is so wide that we expect considerable literature to be presented on this obscure point, which ought to prove of inestimable value to the medical profession.

GRAVEL.

This condition while as old as the hills is often an intractable malady to treat. Dr. J. Alexander Wade, of Danbury, Conn., emphasizes the value of thialion in the treatment of gravel in a paper published in the *Toledo Medical and Surgical Reporter*, (see page 51). In this paper the doctor dwells particularly on the speedy and sure effects of this drug and makes a comparison between it and the lithia waters and tablets which are found so abundantly in the market, much to the disadvantage of the latter.

HEADACHE CAUSED BY URIC ACID EXCESS IN THE BLOOD.

Some remarkable cures of headache caused from this source have been cured by thialion. Dr. R. W. Lowe, of Ridgefield, Conn., in a fascinating and interesting paper published in the *Texas Medical Journal* for August, 1898, entitled, "Some Problems Solved," (see page 45) gives in full the details of a case which is well worthy of perusal and study. It is just possible that there are many such cases that need only thialion to effect a cure.

NEURALGIA.

It has been clinically demonstrated time and again, that certain forms of neuralgia are due to an excess of uric acid in the blood. A very interesting case is reported by Dr. Lowe, (see page, 45). Other observers have found the same results from the use of Thialion in this class of cases.

LATENT GOUT OF THE MENOPAUSE.

It is astonishing how many morbid conditions presenting to the busy doctor, puzzling in the extreme, are cleared up when the light of science is turned upon them. Dr. N. L. Wilson, of New York City, in an article published in the *New England Medical Monthly*, for

September, 1898, (see page 429) goes into the details of a case of latent gout of the menopause, which is little short of a revelation to those who have not given this subject the careful consideration which it deserves. We would suggest to the readers of this little pamphlet a very careful perusal of this article as it may tend to throw light on some case which is puzzling, and in the dark.

DOSE AND METHOD OF ADMINISTRATION.

In giving Thialion it must be remembered that it is slowly and only slightly soluble in cold water, while it is freely so in hot water.

It must be given well diluted. Say take half a tumblerful of hot water, dissolve a teaspoonful of Thialion in it, then add enough cold water to fill the glass. In this way it is more readily assimilated, never irritates the stomach. This quantity constitutes one dose.

When only one dose a day is taken, it is best administered as soon after rising as possible. This is important.

In gout, the uric acid diathesis and rheumatism, the patient should be brought under its influence as quickly as possible. In order to do this a teaspoonful should be dissolved as above, administered three times a day before meals for **three days**. **During this time** the urine should be tested with litmus paper at least once a day. If it is found to be neutral or very near the neutral point, **stop**, as it must not be made **alkaline**. After this, one dose should be administered every morning as early as possible.

In chronic lead poisoning the dose should be a teaspoonful dissolved as above directed and given every two hours until the bowels have freely moved, when once a day in the morning will be sufficient.

As a laxative, a teaspoonful or **less**, as condition warrants, should be given early in the morning.

In chronic constipation a teaspoonful should be given each morning for a week and then every other day until the cure is effected.

In cystitis one teaspoonful three times a day for one day and then one-half a teaspoonful twice a day.

In malaria a teaspoonful in the morning, with full doses of quinine at bedtime.

In diseases of the stomach and intestines the dose must be regulated by the case and condition of the patient.

The normal dose of Thialion is one teaspoonful, heaping full and the teaspoon a medium sized one. It must be dissolved in hot water and taken as hot as possible.

It must be remembered that in some cases which are particularly susceptible, Thialion produces very free catharsis. If this is too much, the remedy must be suspended for a time or the dose lessened as the conditions require. In diseases of the **liver, rheumatism** and the **uric acid diathesis**, free catharsis is desired and important.

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CLINICAL NOTES BY EMINENT WRITERS.

THREE CASES OF LEAD POISONING AND THEIR TREATMENT.

BY WILLIAM C. WILE, A. M., M. D., LL. D., DANBURY, CONN.

(Reprinted from *International Journal of Surgery* for June, 1898.)

The treatment of both chronic and acute lead poisoning (lead colic) while usually successful, i. e., not many cases dying, still the process is often tedious and uncertain, while it is rare indeed, if by medicines we are enabled to completely eradicate the lead from the system. By removing the grosser parts, by taking the patient away from contact or source of supply, nature finally unaided finishes the elimination in her own inimitable way, but if the patient is not removed from the contact or source of supply, the system becomes so impregnated with the lead that it becomes a very serious factor in health.

There are four prominent classes who absorb through their daily occupation lead enough to produce serious results.

The first are those who absorb the metal from drinking water which passes through corroded lead pipes. These cases are rarely serious, but to a certain extent interfering with the normal healthy condition of the body.

The second class are printers who absorb the metal from handling type and though most printing offices look out for their employees in this respect, advising frequent slushing of the bowels and taking acidulated drinks, still in spite of these precautions we have some severe cases in this class.

The third class are painters, who absorb the metal from the white lead and oil mixture used while painting. The cases in this class are of more frequent occurrence and more severe in the attack than are either of the classes before mentioned.

The fourth class are the workers in rubber, this includes to a greater or less degree all men who work in a rubber factory, but more especially are those subject, who are employed in the mixing or calendering departments. As it is well known, in order to vulcanize India rubber, it has to be mixed with various chemicals, notably among which is lead, generally white lead or red lead. The men who weigh out the batches in the weighing room of the rubber factory and the men working at the calendering machines where the lead is mixed into the rubber by passing through very large, heavy, steel rolls, are the ones most affected.

In this class we have a very serious lot of cases. It complicates every other disease. I resided over 15 years at Sandy Hook, Conn., where there is a large rubber factory and during that time I must have seen a thousand or more cases.

It was my experience that if a man who worked in either of the departments mentioned above, had any other illness he was sure to have a harder time, a graver sickness, require larger doses of medicine, with a prolonged convalescence than those who did not. I do not remember while residing at there of a single case of pneumonia among these mixers or calenders that ever recovered. Usually about the third day the grim messenger made his visit.

The process of absorption of the poison commences immediately upon the man's assuming this kind of work, and it goes on until lead colic supervenes and the doctor is called in. This is probably the first intimation the man has that he is absorbing lead, though his health has not been good for a long time previous. It takes a

longer time to produce this result in some cases than others, for some of the workmen seemed to be more easily impressed by the poison. Rarely does the patient consult the physician till this condition of colic presents itself.

At this time the examination shows a lead line on the teeth and gums which is deeper denser, thicker than in any other form of lead poisoning. The deposit on the teeth is so great in some of these cases where the man has worked for years in these departments, that it can be literally cut off. In these attacks of lead colic the pain is so severe that in the majority of cases a hypodermic injection of morphine is required to relieve the sufferer. Of course this is only palliative but it has to be done.

Then we find the constipation most obstinate and in some instances so persistent that it is impossible to get them to move and the patient dies before relief comes. In these cases every effort is made, by injections and internal medication to affect their movement but the bowels are simply immovable. Of course these cases are rare but they occur just the same in the practice of those who live in communities where such factories are located. If the bowels can be moved, thoroughly cleaned out (saline purgatives being the best), and then kept open, supplemented by the administration of the saturated solution of iodide of potash, 10 drops three times a day after meals, which keeps up the process of elimination, we bring about all that can be expected in this class of cases. The difficulties to contend with are the obstinacy with which the bowels permit themselves to be moved. Weeks have elapsed sometimes before they resumed anything like a normal condition.

The following three cases presenting themselves in quick succession suggested a new plan of treatment which has been so thoroughly successful that I was tempted to present it to the profession with a view to removing some of the difficulties in the path of my brother practitioners. I always sympathize with those who have to deal with many of this class, but I feel confident that if the lines laid down in this paper are carefully followed out the doctor's cares will be considerably lightened.

The first case that presented itself was that of John McN., a resident of Sandy Hook, Conn., and an employee of the rubber factory, in that place. He was 42 years old and had worked in that factory for eighteen years, either in the mixing room or on one of the calendaring machines. As he stepped into the office door, he presented a typical picture of one of those unfortunates who have absorbed large quantities of lead. His face was pale, he was thin and as he crossed the threshold he was bent, his face was drawn as if in pain, his step was a tip-toe almost, so as to avoid jar as much as possible and his first words were characteristic.

"Good morning, doctor, I've got it agin."

He was suffering from the beginning of an attack of lead colic.

On looking in his mouth his gums presented in a marked degree the leaden hue, while there was a lead line on his teeth. Familiarity with this class of cases enabled me to make a diagnosis without much of an examination. I ordered him to take a teaspoonful of thialion as soon as he got to the drug store, dissolving it in a cup of hot water. This dose was to be repeated every two hours fasting till the bowels moved freely and then he was directed to take a teaspoonful in the same media each morning on rising.

He was to let me know by telephone that night if he did not get relief, and in any event he was to see me in a week's time.

I did not hear from him till the week was up, when he came into the office smiling and happy. He said his bowels moved soon after taking the third dose and with the movement his pain left him, as is usual in these cases. The trouble has always been in getting the bowels to move. On examining his mouth I found to my astonishment that the lead line on gums and teeth was very materially lessened and as I did not suppose that the Thialion would do anything more than produce the necessary evacuation. I was surprised.

The results having been so good I ordered him to keep up the medicine, taking it as before, each morning and to report in two weeks. He did not come until three

weeks had passed and then all of the lead lines had disappeared and he was in fine fettle. He said he was in better health than he had been for years before. He kept up the treatment for two weeks more and a letter received from him a short time since, three months after treatment, says that he has had no return, though still working at the old post, but, he significantly added, "I take a teaspoonful of Thialion dissolved in a teacupful of hot water one or two mornings each week, as nothing has ever seemed to do me so much good."

Case two is in striking contrast to the one mentioned first. John W., aged 23, had been working at a calendering machine in the same factory only eighteen months. He stated that for the last two months his health had been bad. Some of his friends thought that it was due to lead, but others said he had been working too short a time to absorb enough of the metal. An examination revealed the lead line well marked on both gums and teeth. The breath was bad, the stomach deranged, appetite capricious, bowels very constipated. He had not had any movement for the last three days in spite of active cathartics having been administered.

He felt as if he had the malaria, dragging and heavy, with aching muscles and bones.

His sleep was like the sleep of the dead, but when he awoke seemed as tired as ever. Urine scanty and high colored. He had never had an attack of lead colic so thought it could not be lead poisoning that he was suffering from.

A teaspoonful of thialion administered in a teacupful of hot water every two hours till bowels moved was ordered. It took three doses to have the desired effect. After this result had been obtained, he was directed to take a teaspoonful each morning for one month. I saw him in three weeks with the lead lines all gone, the transformation from a sick to a healthy man being complete and wonderful. He kept up the medicine for two weeks more when he stopped it. He has not had an attack since, which is six months ago.

Case three was of a different type, that is, its origin was from a different cause and the condition as well as symptoms presented were different. Charles W., a printer, consulted me about two months ago with all of the symptoms of lead poisoning. He said that for years he had been chronically constipated, being compelled to take some sort of physic, till at last enormous doses had to be taken to get any satisfactory sort of a movement. He was addicted to the drink habit and was always worse after a debauch.

When he consulted me he had been on a long drunk and had as severe an attack of lead colic as I ever saw. He had been a printer for nine years and had never taken anything to get rid of the accumulating lead. He was writhing with pain, while a careful examination of the bowels showed masses of fecal matter packed in the colon, while a finger into the rectum showed that part of the bowels were also filled with feces. So dense was this latter mass that I determined it would be necessary to relieve it by manual interference. His gums showed the lead line perfectly, though not so well marked as in the other two cases.

Oiling my hand well I commenced to break up the masses in the rectum and quite a job it was. As soon as one mass was removed, another came down until an ordinary sized chamber was half filled. He was by this time becoming exhausted and while all had not been removed I thought it better to give him a little time to rest. During the interval I directed a teaspoonful of thialion dissolved in hot water to be given every two hours, promising to call again in six hours. After the second dose had been taken a fair movement was had and a copious one after the third, at which time all of the pain left him. I saw him seven hours after my previous visit; he was sleeping soundly. The after-treatment consisted in a teaspoonful of thialion each morning with good, nutritious diet. I kept watch of him for six weeks, but the last traces visible of the lead had gone by the end of the third week.

There can be no question of the value of this sort of treatment in these cases and while I am not able to explain the *modus operandi* still, I do know that three cures were effected where heretofore the utmost difficulty had been experienced in getting

anything like such results. If we remove the obstruction we do a lot toward relieving our patient, but if we clear out of the system all of the lead we cure our patient. I believe that thialion in these cases forms with the lead a soluble salt which is speedily carried out of the system just the same as I believe it combines with the uric acid in the system forming a soluble salt which is easily removed by the ordinary operations of the functions of the body.

THE TREATMENT OF THE URIC ACID DIATHESIS.

BY F. E. HALE, M. D., PROVIDENCE, R. I.

(Reprinted from *The Medical Mirror*, St. Louis, Mo., June, 1898.)

Among the multitude of cases which come before the general practitioner for treatment, none are more urgent in their demands for relief or, in many instances, more difficult to relieve, than those suffering from the various manifestations of the uric acid diathesis. This peculiar inability of the system to eliminate the uric acid formed, for, according to the best authorities, the condition depends upon lessened excretion rather than increased formation, is to blame for a myriad disagreeable and dangerous symptoms, which call for treatment. In a recent paper* Craig thus ably sums up the symptomatology of the uric acid diathesis.

"The symptoms of the uric acid diathesis, excepting gout and rheumatism, are protean in number and variety and are exceedingly hard to classify. Among those affecting the digestive system are anorexia, discomfort after eating, flatulence, pyrosis and persistent constipation; of the urinary organs, a sense of heat and burning after micturition, frequent micturition and pain over the region of the kidneys; the pulse may be irregular and intermittent, there is increased arterial tension and sometimes attacks of palpitation and there is generally present great depression of spirits and a general sense of weariness and inaptitude for effort of any kind. The sleep is restless and on awakening in the morning the patient feels as tired or even more so, than on retiring.

The symptoms arising from the nervous system are of much interest, comprising vertigo, tinnitus aurium, muscular pains and cramps, headache, neuralgia, affecting various parts of the body, spinal irritation, vaso-motor disturbances, insomnia, general nervousness and fevers. Hysterical and even epileptiform symptoms have been described by some authorities and delusions are not uncommon.

One or many of these symptoms may be associated in a single case, but in no one case will they all occur. Migraine, with its peculiar symptomatology is probably an expression of the uric acid diathesis and from repeated examinations of the urine after attacks of migraine this inference is strengthened, for in a vast majority of instances the urine has shown an excess of uric acid.

The symptoms enumerated are generally seen either in those leading an indolent, luxurious life, little out-door exercise being indulged in, or in those whose occupation keeps them within doors and subjects them to more or less mental strain and worry. In fact the hypochondriacal or those tending toward that temperament are most subject to the uric acid diathesis.

The urine of those suffering from this 'diathesis' possesses great clinical importance and in every suspected case should be most carefully examined. It is always highly acid, of a dark golden color and in a large proportion of cases contains a sediment of uric acid crystals.

In a larger proportion of cases, however, the uric acid is not deposited as uric acid crystals in the urine, but exists in combination with sodium and ammonium, forming acid urates. When it is separated from its bases it crystalizes in rhombic or prismatic

**New England Medical Monthly*, July, 1897.

crystals of a red color and it is these which form the red granules seen in some urines. Not every urine showing this sedimentation contains uric acid in excess, for it may be due to a decreased solvent power of the urine, rather than to an increased amount of uric acid.

More commonly the urine of those having the uric acid diathesis shows a fine, powdery sediment, pinkish in color and which is formed by the precipitation of amorphous urates. Such a disposition may often occur in the urine of other diseases, but its presence is always suggestive and the clinical history will generally bear out the diagnosis of uric acid disease."

As to the treatment of the condition known as the uric acid diathesis, much has been said and written. Numerous remedies have been advocated, used awhile, and then discarded, as experience proved their uselessness. Only one remedy can be said to have stood even at all, the test of time and scientific criticism, and that is lithia in some form. The so-called lithia waters are almost entirely inert, so far as their effect upon the uric acid trouble is concerned, while the carbonate of lithia, while somewhat successful, is irritating to the stomach and absorbed with great difficulty. Recently, however there has been introduced into therapeutics a new salt of lithia, formed by combining lithia with an alkaline laxative, which combination results in a laxative salt of lithia. I have used this salt (Thialion) in the treatment of the uric acid diathesis with very great satisfaction, as it does not irritate the stomach and accomplishes beneficial results which are quite remarkable.

Before speaking more in detail of the medicinal treatment of the diathesis, let us consider for a moment some points concerning the dietetic and hygienic treatment of the disease. The diet should be carefully regulated and I can do no better at this point, than quote from a valuable paper by Tyson* upon the subject. He says:

"This consists essentially in the elimination from the food of all nitrogenous or albuminous principles, whose complete combustion results in urea and incomplete combustion in uric acid. As to these there should be no half course. They ought to be excluded as far as possible from the dietary. I say as far as possible, for it is practically impossible to eliminate them altogether. The foods which are the type of this class should, however, be altogether omitted. Such are the meats of the butcher shops, the albumen of eggs, and the cheeses. The first include beef, veal, mutton, lamb, and pork, whether salt or fresh, and for the most part fish. As to cheeses, as one-half pound of cheese contains almost as much nitrogenous matter as a pound of meat, 27 per cent. when made of the whole milk, and 28 per cent. when made of skim-milk, it is evident that they are contraindicated. If we consider only the edible parts of beef, i. e., meat deprived of the refuse represented by bones, skin, and shells, it contains, according to its source, 17 to 23 per cent. of proteids; mutton from 15 to 18 per cent. Of fish, flounder contains 13.8 per cent., mackerel 18, halibut 15, and salmon 21 per cent., or quite as much as beef and more than mutton; salt codfish contains 15 per cent., smoked herring 20, and canned sardines 24. Poultry contains 14 to 15 per cent. of albuminates and game 32 per cent. The hen's egg, including albumen and fat, contains 13.7 per cent. protein, whence it is plain that the yellow of eggs contains a very small quantity and becomes a suitable food.

On the other hand milk contains but 3 to 4 per cent. protein, butter 1 per cent., and oleomargarine 0.6 per cent. The fat oyster contains 8 per cent. and the lean 4.2 per cent. and the lobster 5.5 per cent. Other fish than the above mentioned 5 to 10 per cent.

Of vegetable foods wheat bread contains 8.9 per cent. protein, wheat flour 11, and graham flour 11.7; rye bread 6.7, buckwheat flour the same, corn (maize) 9, rice 7.4, sugar 0.3, potatoes 2, sweet potatoes 1.5, turnips and carrots 1, cabbage 1.9, melons 1, apples and pears 0.4, and bananas 2 per cent. Again, beans contain 23.2 per cent. and oatmeal 12 to 15 per cent. large proportions of proteins.

*Proceedings Pan American Medical Congress, 1892. Vol. 1.

Thus the typical foods permissible from the standpoint of composition are milk, butter, the succulent vegetables, except beans and oatmeal, and fruits. To these oysters and lobster may be added moderately, fish except those named as containing a large amount of protein, and where extreme rigidity is not required, poultry in moderate amount; but all butcher's meat should be strictly forbidden.

It is usual also to interdict the use of carbohydrates, i. e., starches and sugars, as well as the hydrocarbons or fats, but I have never been able to see any reason for this.

There is, however, another sort of ingesta, also entirely or almost free from nitrogen acknowledged to be both a predisposing and exciting cause of gout, and that is malt liquors and wines. These are composed of water, alcohol and other carbohydrates, and a trace of mineral matters, but no nitrogen. It is not easy at first thought to understand why these substances should be harmful. Experience, however, shows that the strongest wines, such as port, Madeira and sherry, by their continued use, are very likely to produce gout; while the lighter wines, the clarets, hocks and Moselle wines, if taken in moderation, rarely produce it. After these, stout, porter, and the strong ales induce gout. Even lager beer, which contains but 3 per cent. of alcohol, is capable of acting similarly; and I know many men who have been forced to give up this beverage because of this effect. Cider and perry, also, predispose to gout to a less degree. On the other hand distilled spirits, especially whisky, are almost entirely without effect in producing gout. Why is this? Plainly, the amount of alcohol is not the measure of the effect, for whisky, gin, brandy and rum all contain more alcohol than any of the wines alluded to. If reference is made to the wines most apt to produce gout it will be found that they are those which contain a considerable quantity of both sugar and alcohol. Such as port, sherry, and Madeira, all of which contain more than 15 per cent. of alcohol and much sugar; also sweet champagnes containing 11 per cent. alcohol. On the other hand some very sweet wines, as Tokay, Malaga, and the higher sauternes, which contain much sugar, produce gout less rapidly. It would seem that those liquors which contain alcohol in combination with other substances, especially sugar, are potent gout producers, especially where they excite indigestion.

That the acidity of alcoholic drinks acts as an exciting cause cannot be doubted. Whatever be the explanation few facts in the clinical history of gout are better established than that the ingestion of acid is an exciting cause.

In the same way act acid fruits, such as strawberries, acid oranges and lemons.

As to exercise it may be said that almost always a history of want of exercise is elicited in these cases and to this is largely due many of the disagreeable symptoms complained of. Craig, in the paper before referred to, says, and I agree with his statements: "Boating, hunting, riding, fishing, walking, are all good forms of exercise and should be, in one form or another, insisted upon as important elements in the treatment. Let the patient be outdoors as much as possible and engaged in some form of muscular exercise. Too much importance cannot be paid to muscular exercise in the treatment of uric acid diathesis."

As to the medicinal treatment of the disease, the alkalies and colchicum have heretofore been most largely used, but with varying success. As I have said I have recently used the new salt of lithia, called Thialion, to the exclusion of every other drug and the following cases illustrate well its beneficent action:

CASE I. T. H., an American, æt. 40; had been suffering for years from bilious attacks, vague undefined pains in the muscles and joints, headache, loss of appetite and insomnia. He had persistent constipation and presented a very depressed melancholic appearance.

Examination of his urine resulted as follows: Specific gravity 1.010, color dark red, reaction very acid, a slight reaction to albumin and the microscope showed a large number of uric acid crystals to be present. He was put upon teaspoonful doses of Thialion, dissolved in a teacupful of hot water, three times a day for a few days, when the same dose was given twice a day for a period of about four weeks. After taking the drug for five days, his urine was examined with the following results:

Specific gravity, 1.020; color, light yellow, no reaction to albumin; no uric acid crystals present and a strong alkaline reaction. His symptoms had improved somewhat, but at the end of two weeks the improvement was very marked. His appetite was, as he said, "immense," his sleep sound, muscular pains had vanished and his constipation had given place to a regularity which had been unknown to him for years.

At the present writing he is in perfect health to all appearances and has not taken any medicine for some time.

The remarkable features of this case are the change in the condition of the urine and the prompt improvement in the symptoms following this change.

CASE II. E. B., German, æt. 25; first came to me complaining of constipation, nausea, headache and severe muscular pains in the arms and legs. He worked indoors most of the day and took but little exercise. His complexion was sallow. There was a degree of emaciation present and he complained of great soreness of the muscles of the arms and legs, on pressure upon them. His urine was scanty, specific gravity 1.032, strong acid reaction, slight reaction to albumin, dark red in color, with a large brick dust sediment. Microscopical examination revealed large quantities of uric acid crystals and a small quantity of amorphous urates. He was put upon the same treatment as the foregoing case and told to report in a week. In just a week he returned and stated that he was feeling much better, the soreness and aching in the muscles having disappeared, his bowels being regular and nausea and headache also gone.

His urine was examined with the following results: Specific gravity, 1.022, color, light yellow and clear; no sediment, no reaction to albumin and a strong alkaline reaction. The microscope revealed nothing of importance save a small amount of amorphous urates.

He was told to continue the treatment for a month longer and at the present time is so greatly improved that he has discontinued the medicine.

In both the above cases directions regarding the diet and outdoor exercise each day was insisted upon and I have reason to believe that my directions were obeyed as far as possible. It is a fact, as seen from the two cases just mentioned, that Thialion will cause a urine characteristic of the uric acid diathesis, i. e., of high specific gravity, strong acid reaction and containing abundance of uric acid crystals, to become alkaline in reaction and normal in its constituents within one week from the initial dose and, furthermore, this change is always accompanied by the most marked improvement in the general symptoms.

Mrs. D., American, married, and aged 26, no children, comes from a gouty and rheumatic family, consulted me on the second day of April, with the following symptoms: A patch of eczema on the right arm of about the size of the hand. This patch had been there ever since she was 18 years old. All treatment was of no avail.

Pains in the joints, especially of the hands and feet, also frequent gouty pains in the uterus. These were especially bad at the time of menstruation. Constipated, large doses of medicine being necessary to get a fair movement. Sleep bad, and appetite capricious. On rainy days pains would radiate through all of the joints and bones of the body. Urine scalding at times and not normal in quantity; very acid.

I commenced to give her a teaspoonful of Thialion twice a day, keeping this up for three days. The bowels moved very freely, but the patient felt better after the fourth day had ended.

Then a dose was given each morning for two months with the result of complete restoration to health. In this case, as in all of the cases of uric acid poisoning which I have treated with Thialion, the bowels acted regularly and the constipation was effectually cured. All of the gouty symptoms passed away and a complete restoration to health followed. Strange to say, the eczema also disappeared and now there is no sign of it.

One thing particularly noticeable in this case was the rapid disappearance of the insomnia after taking Thialion. She had been a very bad sleeper before, but the second

day after commencing treatment, she slept well nights and was not troubled with insomnia afterward.

Frank H., 53 years old, consulted me about the middle of January. For years he had suffered from chronic gout which had been complicated with torpidity of the liver, great yellow and dark brown liver spots appearing over the face and hands chiefly, eyes yellow and the general hue of the skin of the whole body was that of a person who had a good deal of derangement of the liver. Joints, especially the tarsal and metatarsal and phalangeal, were tender, stiff and enlarged. He has to be on the road a good deal, consequently the meals were eaten in an irregular manner and all of his habits broken up more or less. The bowels were constipated, the tongue coated, with a vile taste in the mouth. The urine was scanty and high colored, with a specific gravity of 1.029.

He was placed on teaspoonful doses of Thialion dissolved in a teacupful of hot water three times a day for three days before meals, the first one taken as soon as getting out of bed in the morning. At the end of the second day he came to me and said that his bowels were too loose, so I directed that he should take only one dose a day and that on rising in the morning. He went away from home for a short business trip and I did not see him for six days, when I found his condition much improved. The color of his skin and eyes had become normal and the liver spots were much fainter. The urine was increased in quantity, the tenderness was lessened in the joints and taken altogether he was very much better. He recognized this himself and was grateful for it.

A teaspoonful was directed to be taken each morning, which was faithfully carried out for two months, when every vestige of the trouble had disappeared. His liver spots were no more, (this was a surprise to me, as I did not know that Thialion acted in this wonderful way on the liver), his complexion was clear, his joints normal and he was well. This patient coming from a gouty family I suggested to him that he take once a week a morning dose of Thialion as a prophylactic.

I was called to see Mr. W. on the evening of January 10th and on my arrival I found him suffering from an attack of nephritic colic. In telling me his history he said that his father had had the gravel before him and that this was the ninth attack. His pain was excruciating, the paroxysms came with the regularity of labor pains. Hypodermic injections of morphine, one quarter of a grain at a dose till three doses were given dispelled the pain at last, though a good deal of soreness lasted over the left side for a week. A careful examination of the urine the day after the attack showed some small stones of uric acid. He was put on Thialion the second day after the attack, as his stomach would not tolerate it the next day. It was given to him dissolved in a teacupful of hot water three times a day for three days and after that once a day in the same media on rising in the morning. In twelve hours the urine showed a large increase of uric acid, in fact the quantity excreted was phenomenal. The pain left his left kidney, his bowels became normal and he improved rapidly. Since then he has had no attack, though rarely six weeks elapsed without one, before taking the medicine, though four months now have passed. He now takes Thialion once a week.

Mr. R., aged 39, a resident of an adjoining town, a jeweler by trade, called at my office the 11th day of April, complaining of a burning pain at the neck of the bladder and frequent micturition (in fact so frequent that he seemed unable to hold but a few drops of water at a time), pains streaking along the inside of his legs, much tenderness over site of the bladder.

He gave no history of gonorrhoea, recently or ever. Had had wakeful, restless, painful nights. Nervous, irritable, rapid pulse, coated tongue, conjunctiva yellow, with a sallow complexion.

He thought that his trouble with his water came from a cold which he caught a week ago, when it first commenced. He had been to two physicians with no benefit and life had become a burden.

I advised him to stay at one of the hotels all night, so that I might see how the medicine acted, for it was evident that the man's condition was such from loss of sleep

and pain, and that he must get relief and that quickly. I ordered him to take a teaspoonful of Thialion dissolved in a tumbler of hot water, to drink as *hot* as he could. This was at eleven o'clock in the morning. As soon as this was done I sent him to take a Turkish bath, directing that he should stay in the hot room at least 25 minutes. He was then to lie down and keep quiet till it was time for him to take the second dose two hours later. On calling to see him at the hotel at nine o'clock that evening he said his suffering began to be relieved in a half hour after he had taken the first dose and that he had taken four doses. The desire to urinate had wonderfully decreased and he was very comfortable, excepting that his bowels were moving very freely. All medicine suspended till morning, when he took another dose of Thialion as soon as he awoke.

He went home at noon with directions to take a teaspoonful of Thialion twice a day for two days and one teaspoonful each morning after that for a week. This man was hard drinker and at his next visit a week later he said: "Did you give me anything to kill the taste for liquor, for if you did it did its work effectually. I have not had the slightest desire for liquor since I saw you last."

He told me at this visit that he had to suspend the medicine for two days because it moved his bowels too freely. He now had no more of the cystitis and was entirely well. The experience in this case was as in the others, constipation entirely relieved, sleep returned and the liver acting normally, as was shown by the natural color of the conjunctiva and the skin.

NEUROTIC LITHEMIA.

BY CHAS. F. CRAIG, M. D., DANBURY, CONN.

(Reprinted from the *Southern Practitioner*, Nashville, Tenn.)

The relation of uric acid to diseases of the nervous system is a subject which has received but very little consideration, although it is a most important one. There can be no doubt but that uric acid has an irritant action upon nerve tissue and that its deposition in the body is followed, in many cases, by symptoms which can only be referred to such action. There is a large class of cases in which the uric acid diathesis is manifested almost entirely by clinical phenomena resulting from the injury done to the nervous system by the retention within the body of this agent, and as there is no account of this class of cases in medical literature, a short description of their characteristic symptoms may be of value.

All cases of the uric acid diathesis present some symptoms arising from the nervous system, but we will consider here only those cases in which the nervous symptoms predominate, *i. e.*, only those which would be classed as cases of nerve disease. Among the many symptoms complained of by these patients are vertigo, tinnitus aurium, persistent insomnia, neuralgia of various nerves, spinal irritation, vaso-motor disturbances and general nervousness.

Hysterical and epileptiform convulsions have been observed by some authorities, and melancholia, associated with delusions and suicidal impulses, has also been observed.

Very many patients suffering from the uric acid diathesis complain of vertigo, tinnitus aurium and insomnia. The vertigo is generally noticed only when the sufferer moves about, or changes position suddenly, when it may be so severe as to cause falling. It is generally accompanied by vaso-motor phenomena, such as a flushing of the face and a sense of congestion in the head. Rarely the vertigo is noticed when the patient is sitting or standing quietly, objects around seeming suddenly to swim slowly before the eyes.

Tinnitus aurium, aside from any disease of the ear, is of frequent occurrence, being generally accompanied by a sudden dilatation of the blood-vessels of the brain and occurring at irregular intervals. The noises heard vary from a slight buzzing to a roar and some patients complain of temporary deafness in the ear affected. One of the most common symptoms spoken of by this class of patients is insomnia, varying in severity, but always troublesome and always accompanied by great general nervousness. One has but to converse with such a patient for a few moments to become convinced that the nervous system is profoundly affected, for the twitching hands, the unsteady eyes, the alternate flushing and paling of the countenance and the general air of "uncomfortableness," evidences this fact very clearly. Vaso-motor phenomena are very prominent in these patients and examination of the urine will always reveal large amounts of calcium oxalate crystals and decreased elimination of urates. The insomnia is invariably relieved by treatment which eliminates the uric acid from the system.

Neuralgia, affecting various portions of the body and ranging in severity from a dull ache to the most severe boring and darting pains, characterize the majority of cases of what may be called "uric acid neuroses." The pain varies with the varying amount of uric acid eliminated, disappearing when elimination approaches normal and becoming more severe as elimination is interfered with. Almost every uric acid patient will complain of a certain amount of pain, but where the nervous system is chiefly affected the neuralgia is more severe and persistent.

Of the more severe nervous manifestations of the uric acid diathesis such as the symptoms attending spinal irritation and hysterical and epileptiform convulsions, little can be said, as the cases reported are few in number and the data given very imperfect.

One of the first clinical signs to strike the attention in these cases is the marked mental depression, verging almost into melancholia. The "world looks blue" to the patient, and he is troubled by vague forebodings and is unable to see a bright side to anything. So marked in some cases is this that suicide is even contemplated, as life seems to have lost all of its former sweetness and pleasure. No amount of encouragement or argument will in the least change or lessen the patient's gloomy views and it is only when the system is properly rid of the irritating uric acid compounds that any improvement can be looked for.

Regarding the treatment of the "uric acid neuroses" it may be said that it is substantially that of the uric acid diathesis in general. Plenty of out-door air and exercise, some labor or duty which will absorb the attention, thus preventing any morbid introspection, and the restriction of the diet, as laid down in our numerous treatises upon medicine, will with the help of certain medicinal measures, relieve and cure the existing condition.

Medicinally, we strive first of all, and most important of all, to aid the system in eliminating the uric acid formed. For this purpose no remedy we have has stood so successfully the test of experience as lithia, for the reason that the combination of lithia with uric acid results in the formation of a lithium urate, which is the most soluble of all the urates. In Thialion, a combination of lithium with a laxative salt, and which has recently been added to our therapeutic resources, we have a most powerful solvent of uric acid and also an efficient laxative, which adds greatly to its value. Its use in the uric acid diathesis is always followed by the most beneficial results, as the following cases will illustrate.

John B., æt. 30, a laborer, came to the author complaining of insomnia, occipital headache, attacks of vertigo, loss of appetite and general restlessness and nervousness. He also complained of soreness and aching in the deltoid and biceps muscles, and also in the muscles of the thigh. His work, that of a truckman, was not heavier than usual, nor did it seem to fatigue him more than it had done for months. His general appearance was good, save that he showed the lack of sleep and seemed very nervous and irritable when talking. He said that he had not slept more than two or three hours a night for two weeks. His habits were temperate in every respect. Examina-

tion of his urine showed a specific gravity of 1.036, strong acid reaction, and a heavy sediment consisting almost entirely of calcium oxalate crystals and urates. His bowels were habitually constipated.

He was put upon teaspoonful doses of Thialion in hot water after each meal for three days, and then the same dose morning and evening and told to report in two weeks. He also received directions concerning his diet. At the end of two weeks he reported as considerably better, his sleep being much improved, but being still troubled by headache and vertigo. The same treatment was persisted in for two weeks longer, at the end of which time he reported that he was sleeping soundly all night long, his headache and vertigo had ceased and his bowels were regular.

Mr. H., American, aged 42, weight 210 pounds, married, consulted me about nine weeks ago, with the following symptoms. For a long time he had suffered from insomnia, together with great irritability. Usually a delightful man in his family, he noticed himself, as did his wife also, a gradually increasing irritability. On the slightest provocation and sometimes on none at all he would break out in seemingly uncontrollable fits of passion. He became exacting and fault-finding to such a degree that living with him became a burden.

He complained of pain down his back with points of tenderness in the lower part of the spinal column. Had fits of despondency and loss of sexual desire. The bowels were fitful in their action, constipated for a week, and then loose for a day or two. Tongue coated in the morning, with capricious appetite. Urine high colored, specific gravity of 1.026 and deposit of brickdust in the vessel after standing, which it was found difficult to remove. Inability to work, especially mental effort, was noticed and being fond of using the typewriter, he found himself striking off the wrong keys, using the wrong words in trying to express himself. At times he had a shuffling gait.

These symptoms continued, gradually growing worse, till the consultation mentioned above was held. My first desire was to clean his system out of the uric acid and regulate his diet. I commenced giving him a teaspoonful of Thialion dissolved in a teacupful of hot water three times a day before meals for three days. This had the desired effect of cleaning out the bowels thoroughly and starting the bile in its natural channel.

Diet restricted to fresh vegetables and cereals, no meat allowed for a week. Then Thialion was given every morning on rising in the same dose and also $\frac{1}{10}$ grain of strychnine was directed to be taken three times a day. At the end of the week the bowels continuing loose, the dose of Thialion was reduced to one-half teaspoonful. He was allowed the ordinary food at the table, but smoking and drinking were tabooed. Improvement at this time was marked. The general symptoms gave way and at the end of two and one-half months of the Thialion treatment he had entirely recovered. In this case the nervous phenomena were markedly prominent and there is no question that when he first consulted me his condition was critical. At this date, June 1st, he says he is entirely well.

URICACIDÆMIA.

BY L. H. WATSON, M. D., CHICAGO, ILL.

Reprinted from the *New England Medical Monthly*, July, 1898.

The medical profession seem to have found a new Tiphys in Alexander Haig, who shall "pilot their Argonautic fleet through strange seas untried before." There is no doubt that Haig has taught us valuable lessons, and we are indebted to him for new and especially painstaking and scientific investigation, in lines not before mapped out.

The "uric acid diathesis" we hear so much about, is the result of destructive nitrogenous metabolism and lack of elimination of its products.

Uric acid is, according to Haig, the offending element in this metabolism. It is formed in the liver and spleen and excreted by the kidneys. When we have uric acid in excess, either circulating in the blood, or deposited in the tissues, we designate the condition as one of "uricacidæmia." This offending substance, uric acid, may appear in the blood under suitable conditions, or in combination with certain bases, like sodium, ammonium, potassium and calcium in the form of urates.

The chief clinical significance of the urates is the quantity of uric acid they represent. Von Jaksch has found that uric acid accumulates in the blood in gout and anæmia as a result of defective oxidation. When the liver and spleen are most active, that is, during digestion, then we have the most abundant elimination.

From his teaching, the daily, hourly and monthly excretion of uric acid depend upon three things; the food we eat, the exercise we take, and the solvent drugs we use. He also claims, a certain proportion must exist between the uric acid and urea excreted, and this proportion must be maintained. We must, therefore, have complete elimination or there is a rise of urea and a fall in uric acid, or *vice versa*. In either case, the balance or proportion, of 1-40 or 45 is lost, and impaired health or absolute disease is the result.

"The formation of uric acid," says Haig, "is practically constant, while excretion varies." It is within our power to regulate excretion as well as formation; we must learn to estimate the quantity excreted and Purdy considers Heintz's method the best.

"Take 200 cc. of urine and add to it 10 cc. of hydrochloric acid; let it stand 24 hours in a cool place. Collect the precipitated uric acid crystals on a filter and wash with cold, distilled water. Dry the filter and uric acid crystals and weigh—weight of filter being previously known; by subtracting weight of filter, the result will be the weight of uric acid in 200 cc. of urine. This is not particularly difficult and approximately accurate. Although the existence of any abundant deposit in the urine, of urates, does not warrant the inference that uric acid is excreted in excess, there is no doubt that there are certain processes going on in the system, the chief evidence of which is such an increase in the elimination of uric acid and through this of urates, that we can establish the condition," says Von Jaksch. In the headache of uric acid, there is often a large increase of these urates, accompanied by slow pulse and high arterial tension.

This is due to blocking up of the capillaries. Neither food selections nor exercise will now avail, and we must use drugs. Among these solvents of uric acid, Thialion, a new lithia salt, is one of the best. In selecting uric acid solvents, we consider chiefly those which make rapid combination and are readily run off with the water from the kidneys, says Kunze. Thialion seems an ideal preparation in this respect and a careful trial has compelled my admiration for a pharmaceutical preparation combining so many virtues and so few faults.

CASE I. Mr. L., 32 years of age, a travelling man, large eater of rich food, has been troubled for many years with muscular pain, indigestion and supposed sciatica. He has been treated by many physicians, and only after taking two bottles of Thialion would he admit any benefit. He has now been under observation two months and declares that he has not felt so well in years. Of course a somewhat restrictive diet

was maintained; but this had been tried before, to the degree of starvation and no relief.

CASE 2. Mrs. L., married lady, 54 years of age. Has frequent attacks of uric acid gravel, traces of albumin in urine, indigestion, uric gas eructations, stomach dilation and insomnia. Washed out stomach daily and gave Thialion. Uric acid copiously deposited, eight grains daily for a week or ten days. Uric excretions one to two grains daily. Insomnia no longer present, indigestion apparently much better, and rheumatism which is hereditary, and from which one son also suffers, is much more bearable. Will continue use in hot water mornings for two weeks more.

CASE 3. Mr. T., young man aged 22, telegraph operator; has suffered from uric acid headache, and intestinal pains for two years; supposed in Louisville to have had gastritis. Has really little or no indigestion. After test meal, hydrochloric and lactic acids were normal in quantity with some undigested starch granules. He complains of frequent pains, first in stomach, then liver, then intestines. Two bottles of Thialion relieved all symptoms, and with free urinary secretions, pains all disappeared and have not returned.

The best time for administering Thialion seems to be in the morning on a fasting stomach, and when the alkaline tide is established, relief usually comes.

SOME PROBLEMS SOLVED.

BY R. W. LOWE, M. D., RIDGEFIELD, CONN.

(Reprinted from the *Texas Medical Journal*, for August, 1898.)

Problems are constantly presenting themselves to the busy practitioner, for solution. Some are knotty and difficult of solving so as to be acceptable to himself and to the profession, and render a cure possible, the result satisfactory to the patient. Those of diagnosis comes first and of treatment afterwards.

The doctor's means of existence, the necessities for himself and family depend on the skill with which he shall relieve suffering and cure disease.

If he does this fairly well a living, at least, is for him, possibly a competency and if brilliant, wealth. These problems present themselves to all classes of practitioners, the country and city alike, as well as the rich and the poor, the talented and the ordinary.

After a considerable experience in the practice of my profession, and coming in contact socially and professionally with many of its brightest lights, I am forced to confess that they all have these problems to solve, to accomplish which they have quite as much difficulty as their more modest neighbor, the country doctor, with honors quite easy as to possible errors of judgement.

It is a good thing that we do not any of us know it all, for it is just such problems that stimulate us to higher endeavor and make honorable competition possible, something to work for besides the constant struggle for the almighty dollar.

The following case, which indirectly led to the treatment adopted in the other two, was just such a problem, to solve which, necessitated a considerable amount of study on my part, and the solution when arrived at, so impressed me that I considered it a duty to have it published, for the lesson there learned may tend to throw light upon some case which now rests in obscurity.

Mr. M., a banker, American, 66 years old, married, a man of family, consulted me on the 6th day of March, 1898, and I obtained from him the following facts. His family history was excellent, both parents dying at a good old age, the father at 77, and the mother at 83. He had one brother and two sisters, all married, who had raised families and were still living. He was born in the country, educated there and entered the office of a small private banking house in a neighboring city at the age of 22. His habits were exemplary, was a member of the church and Sunday school, never drank

except in the most moderate way and at the table socially. Never drank in his life to excess. He did not smoke and a very careful examination failed to reveal any specific lesion or history. He had married at 26 a lovely woman, who bore him three healthy children and who made his home an exceptionally happy one. At the time of his marriage he moved to New York City and was engaged in a large banking house of which he ultimately became the head. He was wrapped up in his business and the accumulation of wealth, while outside of this he cared for little besides his family, of whom he was inordinately fond. His habits were sedentary, taking but little of that exercise out of doors which is so essential to health.

He was five feet, nine inches tall and weighed 180 pounds, not what you might call a fat man, but one simply showing good keeping. His appetite was always good, preferring plain food and cooking, meat forming a large part of his diet. At the age of thirty-six he commenced to have attacks of headache which lasted from that time till now, a matter of thirty years. These headaches were of a peculiar character.

The afternoon before the attack would come on he would be restless and uneasy, no pain, no indigestion, but a simple nervousness, a cloud would rise on the horizon betokening (as he often said) the coming of the headache storm of the next day. The pain would commence at the back of the head at the base of the brain gradually increasing till the whole organ was one aching, throbbing mass. The sight was dim, conjunctiva congested, but the pupils showed no change.

Finally he was compelled to go to bed, there to remain for a day at least and many times two. When he left it, he looked as if he had been through a fit of sickness. Of course it is not necessary for me to say that with his means he could and did employ the best medical talent, in fact both at home and abroad, he had the best that could be procured. He was medicined, shocked, douched, sprayed, physicked, injected and purged, anodyned and narcotized till, as he said, "it was no use" he had simply to live with it till he died or it killed him. These attacks at first came on about once a month, but as he grew older, they increased in frequency till at the time of my visit, they came on once in about four days.

I was called to see him during an attack at about ten o'clock in the morning of the day in question. The room was darkened, perfect quiet pervaded the house from top to bottom, the servants going about on tip-toe. In fact everything tended to show that severe illness was present.

I found a slight rise of temperature of about one-half of a degree. The tongue, while not coated, was white and flabby, indicating an impaired digestion. His pulse was slightly accelerated, 88. He lay with his knees drawn up and perfectly quiet.

The lines of his face were drawn sharply, showing how intense his suffering was. His wife informed me that twice during these attacks lately he had had a mild delirium.

On questioning him about the condition of his bowels he said that they were very regular and had moved the evening before. While the movements had been regular, he said that he had not for years felt the relief he should have done after a normal passage. He insisted that I should give him something simply to relieve the pain, nothing else in fact. I was informed by him that I need not ask him questions, I was not called in for that. Simply relieve the pain by a hypodermic injection and go away. If I did not do this I could go away as that was all I was called for. It had come at last to the only thing that was sure relief, the deadly morphine.

The case was an interesting one and I sparred for time and wind.

I absolutely refused to give the morphine unless I had tried other means and found that they were of no avail. After a careful examination of his heart and finding that all right I administered a small quantity of chloroform by inhalation. This gave him some relief and a little sleep. While he was asleep I examined his urine and found that it was acid, containing a quantity of phosphates above the normal, while the specific gravity was 1025.

A half hour's sleep brought him to consciousness and pain again.

I had in the interval made up my mind that it would do no harm and possibly some good if I unloaded his bowels thoroughly, so I gave him a teaspoonful of thialion dissolved in a teacupful of hot water and had him drink it as warm as possible. This was repeated in two hours. An hour after the last dose he had two copious evacuations, the large mushy stools, that thialion invariably produces.

While this medicine was getting in its fine work I had administered to him small quantities of chloroform so as to keep him quiet, but after the last passage he went to sleep and slept well till morning, I staying all night with him.

In the morning I had a further talk with him which resulted in his consenting to take another dose of thialion which resulted during the day in two more passages and a copious flow of urine.

The relief that this thorough cleansing gave him was immense and after my call at 6 P. M., I left him at his request for good.

Four days after my last visit he called at my office stating that he wanted to know what that medicine was I gave him and to get some more. He said it certainly made him feel better. I ordered him to procure a bottle of thialion and take a teaspoonful each morning on rising dissolved in the same quantity of hot water.

It was to be taken as hot and as early after waking as possible. He called again in a week and to my surprise, he said that he had not had any headache since I made my first visit, but he felt a little nervous and was afraid that he would have one in the morning and asked me to be sure and call, which I did. I found him with one of the headaches sure enough, but of a very mild character. By ten o'clock he was out-doors walking about, a thing he had not done in years on a headache day.

According to my instructions he continued the thialion every morning and from this time on for the next six weeks he had two mild attacks only and then they left him for good, at least he has not had an attack since. He still takes a teaspoonful of thialion twice and sometimes three times a week.

I did not at my first visit think that case was one of uric acid headaches. In fact I was at a loss for a diagnosis and I gave the thialion alone to relieve the hepatic torpor and sluggishness of the bowels that I felt sure to exist. The effect of the remedy was so marked from the very first almost, and its continuance so happy in results that I am satisfied that the uric acid played an important part in this drama of pain and suffering and that the thialion united with the uric acid forming a soluble salt which was quickly washed out of the system and the cause of all of his sickness removed. It is unnecessary for me to say that Mr. M. is my good friend and he showed his appreciation of my skill in getting him out of his trouble with a handsome check.

CASE II was that of Mrs. C., aged 69 years, who weighed 190 pounds. She was wealthy, a high liver, meat forming a prominent part of her diet. I was called to see her early in the morning of April 7th and found her suffering from a severe attack of neuralgia of the right arm. The pain was lancinating and so severe as to necessitate a hypodermic injection at once and before I could make an extended examination. After it had eased, she told me that she had suffered from this pain at intervals differing as to the length of time for the last three years. She had tried a host of remedies and doctors, but without any permanent benefit, the morphine alone giving relief.

This had to be continued for a couple of days when the pain went away only to return again in a short time.

Having the case of Mr. M. in mind, I gave her a teaspoonful of thialion every two hours till the bowels moved thoroughly, which happened after the fourth dose, the morphine probably interfering with the action of the medicine somewhat. She, as well as myself, was astonished, when at my evening visit she informed me that she had had no more pain and that she was quite comfortable and I found the same condition in the morning when I made my next visit.

I directed that the thialion should be kept up in the same dose and manner twice a day for two days and then but once a day, that in the morning. In the course of two

weeks, there being no return of the pain the dose of thialion was taken but twice a week. From that time till now she has had no return.

The neuralgic pain in this case was without doubt due to the excess of uric acid in the system and which the thialion dissolved, freeing her from her enemy of years' standing.

CASE III. Mr. D., a mechanic, called at my office on the 2d day of May, giving me the following history. He was 29 years old, American, married man of family, temperate, but using tobacco freely.

A hearty liver, weighing 170 pounds and standing about six feet in his stockings. His bowels were regular but for the last three months he had suffered very badly with irritability of the bladder. He could not hold his water as he used to do and made it five or six times a day and what was the most annoying of all, he had to get up two or three times in the night.

He said he had had no blow or other cause that he knew of to give rise to the trouble, but it was mighty inconvenient and he wanted it stopped. Knowing from experience that thialion will remove pain in the kidneys when present from irritation I thought I would try it on him. I gave him a prescription calling for a bottle, directing him to take a teaspoonful dissolved in a teacup of hot water three times a day and to come and see me on the second day after. He did this and on his next visit he complained of a very bad looseness of his bowels, but his pain was much better.

I directed him to take the thialion every morning on rising and in a week he was entirely relieved from all of his disagreeable symptoms. The third day he stopped me while I was passing his house, saying he wanted to show me what he passed with his water. At the bottom of the vessel which he had saved there was a thick coat of uric acid crystals. They were fastened to it, and could hardly be removed with sapolite. The quantity was greater than I ever saw in any specimen before.

This case was a revelation to me of the power of this drug and its wide range of application.

LATENT GOUT OF THE MENOPAUSE.

BY L. N. WILSON, M. D., NEW YORK CITY.

(Reprinted from the *New England Medical Monthly*, September, 1898.)

My attention was attracted to this, to me, new subject, first, by a paper which was read before the British Gynæcological Society and afterwards published in the *British Medical Journal*. I do not remember the author's name, but the paper impressed me very forcibly as being an able one and on a subject which was not very much understood, if at all, by the profession. It was not a great while afterwards before the following typical case presented itself, and as it is so uncommon or at least so infrequently recognized I made up my mind to report it:

Mrs. T., a widow, 46 years old, American, mother of two children, had always weighed about 135 pounds till about a year ago, when she began to take on flesh rapidly and at the time of this consultation, October 3, 1897, she weighed 201 pounds, while standing in her stockings she measured five feet nine and one-half inches in height. This increased stoutness was accompanied with much muscular flabbiness.

At the time of the commencement of this flesh taking the year previous, her menstruation became irregular and she presented all of the symptoms of those women who are approaching the menopause. She first menstruated when she was fifteen years of age.

The symptoms presenting were great irritability and restlessness, shortness of breath, especially on the least exercise, with cardiac debility. The hands, feet and face were puffed up while there was present great mental and bodily lethargy.

There was broken and disturbed sleep, with a feeling of weariness on rising in the morning. In fact it was the middle of the forenoon before she was able to pull herself together. She suffered severely from headache, the attack coming on at any time of the day and lasting for an hour or several hours as it might be. None of the remedies useful for headaches seemed to have the least effect on her and she simply had to wait till they went away.

Neuralgia, especially of the back of the head and neck was present almost constantly, in fact was so persistent at times that she would be compelled to take her bed and remain there till it in a measure subsided. She suffered from indigestion and dyspepsia, accompanied with much flatulence, together with a most obstinate constipation. She also complained of lumbago with a host of vague muscular pains. The tongue was coated, but she had no bad taste in the mouth, though the breath would indicate that she ought to.

An examination of the urine showed that below the normal quantity was being voided. The reaction was acid. Urates and uric acid crystals in abundance. No casts, no albumin. Specific gravity 1029. She had tried many remedies, treatments and diets in vain. Her condition was pitiable indeed. It seemed that ere long her mind must give way under the strain.

I directed her to take a teaspoonful of thialion three times a day dissolved in a teacupful of hot water, drinking it as hot as she could and, if possible, one hour before the meals. On my visit on the 4th I found that she had had two free evacuations immediately following the third dose of the medicine, while there was an increased quantity of urine voided, which was of a lighter color. Directed the medicine continued as before.

October 5th I found that she had had three more movements from the bowels since I was there last, the third of which was of a very loose character, of a dark brownish green color, smelling horribly, and stinging around the anus in its passage, indicating bile pure and simple. All of the rest of the symptoms were slightly improved. The thialion was then reduced to a teaspoonful each morning on rising.

October 6th, patient much better. Quantity of water voided much larger, the urates and uric acid lessened markedly in quantity, the complexion, which had been sallow and yellow, was clearing up and the sleep had returned in a normal way. Spirits were better. She was much more happy and less depressed and irritable. Puffiness of the hands, feet and face much reduced and rapidly diminishing. Muscular pains greatly relieved and so much of an improvement presented itself that the patient and family were delighted and appreciative.

From this time on for two weeks the progress toward recovery was uninterrupted, the dose of thialion was given on rising each morning and in the same manner, the improvement being progressive and sure. At the end of two weeks it was taken only twice a week, then once a week for a month, when the cure was complete.

The transformation from the misery and pain, in this case to that of health, was little short of wonderful. The scene was completely changed from sickness and suffering to health and happiness.

In the paper alluded to at the beginning of this article the author insists that the treatment must be directed:

1. To increase the elimination of waste products from the blood.
2. To disperse the morbid products in the lymph spaces, lymphatics and muscles.
3. To improve the state of the sympathetic nervous system."

This the thialion did, as I consider no other known remedy could have done, surely not in the same length of time and with the same certainty. The general treatment included regulated exercise, the heavy meal being taken in the middle of the day, and regular hours.

IRREGULAR GOUT.

BY JAMES S. KENNEDY, M. D., CHAMBERSBURG, PA.

(Reprinted from *Gaillard's Medical Monthly*, September, 1898.)

Gout, according to Osler, "is a nutritional disorder, associated with an excessive formation of uric acid and characterized clinically by attacks of acute arthritis, by the gradual deposition of urate of soda in and about the joints and by the occurrence of irregular constitutional symptoms."

By the laity and many physicians, gout is supposed to only effect the articulations of the great toe, but this is a grave error, as it may occur in any of the articulations and even in the muscles and tendons. Wherever the urate of soda is deposited, there will the symptoms of gout manifest themselves. Taken in this broad sense gout is extremely frequent among the American people, and is undoubtedly growing more so as the various sedentary occupations increase and physical exercise becomes thereby curtailed.

The vast majority of the medical profession admit now that gout is primarily due to a deposition of the insoluble urate of soda in the tissues and articulations. The blood shows a great increase of uric acid and Garrod believes that acute attacks are due entirely to the accumulation of urates in the blood.

Although the first joint of the great toe is commonly affected, the ankles, knees and joints of the wrists and hands are very often attacked. In such joints there may be found deposits of urate of soda and the surrounding ligaments become filled also with the deposit.

The kidneys show deposits of urates between and in the papillæ, and there is generally present, if the disease has been of long standing, an interstitial nephritis.

In this paper, the writer wishes to speak especially of the symptoms and treatment of that class of cases of gout, known as irregular gout, or those cases to which the term "gouty diathesis" is applied. This form of the disease occurs, as Osler says, "in persons who have lived not wisely but too well, who have eaten and drunk largely, lived sedentary lives, and yet have been fortunate enough to escape an acute attack." No age is exempt and the symptoms to which the disease gives rise are protean in number.

The following are some of the many symptoms which patients suffering from irregular gout complain of: So-called bilious attacks with foul breath and tongue, constipation, and the sallow skin denoting a torpid liver, pain around the heart and darting pains in the joints and muscles; a feeling of faintness and vertigo; heat and itching of the feet, leg cramp and constant or periodical headaches. The urine is high colored, acid in reaction and may show an increase of uric acid, but in many cases this increase only occurs periodically, occurring after an increase of the symptoms. Sugar is often found, and such patients are very liable to the formation of urinary calculi.

The treatment may be divided into the hygienic, dietetic and medicinal.

The hygienic treatment consists in keeping the skin active by daily baths, the wearing of warm clothing and a certain amount of exercise. Any form of out-door exercise is good, but walking, rowing and horse-back riding are probably the preferable forms. The patient should lead a quiet life and eat sparingly, but often, if necessary.

The diet should consist of meat, except veal and pork, in any form, eggs, the fresh vegetables and the acid fruits. The following articles should be avoided: All starchy or sweet articles of food, sugar, potatoes, salt meats, lobsters, sweet fruits, especially melons and strawberries, all forms of hot bread stuffs and the cereals.

The medicinal treatment has, until recently proven rather unsatisfactory in the author's hands. Mineral waters are but feebly beneficial and such drugs as colchicum, iodide of potassium and guaiacum are sometimes though rarely useful. Lithium is strongly recommended by Osler, but the author met with but little success with it until quite lately, when a combination of lithium with an alkaline laxative, known as thialion, was brought to his attention. Thialion has been used in several heretofore intractable cases with really surprising results, as the two typical cases which follow, demonstrate.

CASE I. This case is a good illustration of that form of irregular gout where the symptoms are mainly gastro intestinal. J. H., æt. 30, American, family history, gouty. Complexion sallow, and rather cadaverous. Examination of urine showed large quantities of calcium oxalate crystals and a few uric acid crystals. Reaction acid, specific gravity, 1.029. His tongue was thickly coated and the breath foul.

The patient came complaining of periodical attacks of nausea and diarrhoea, constipation being present in the interval. These attacks occurred about every three weeks. He complained also of the following symptoms: Vertigo, pain of a shooting character in the arms and legs, headache, a peculiar gnawing feeling in the stomach continually, and great lassitude and weakness.

He was given directions concerning diet and exercise, and directed to take a teaspoonful of thialion in half a glass of hot water three times a day for two days and then once a day, immediately after arising in the morning, until told to stop.

He faithfully followed directions and reported himself in two weeks as decidedly better. At the end of a month he reported as being entirely well, and said that for ten years he had not felt as well as he did at the present time. The change in his appearance was really remarkable and proof positive of the value of the treatment.

CASE II. M. C., female, æt. 27, had suffered for some weeks from the following symptoms: Pain, sometimes sharp, sometimes dull, in the joints of the feet and hands, heat and tenderness in the feet, constipation, headache, and a general feeling of malaria and lack of ambition. At times the pains in the small joints were so severe as to awaken her from sleep. She had observed that when the pains were most severe, her urine deposited a brick dust sediment. An examination of the urine showed a highly acid reaction, large amount of urates and a high specific gravity.

She was put upon the same treatment as the above case and at the present time, three weeks after commencing treatment, her symptoms have entirely disappeared and she feels perfectly well.

These two cases cited show the effect of this new lithium combination in this disease, and it would seem that in thialion we have a most efficient agent in combating irregular gout.

GRAVEL.

BY J. ALEXANDER WADE, M. D., DANBURY, CONN.

Certain solid substances which are usually carried off with the urine are sometimes precipitated, crystallized in the tubules of the kidney or any of the other portions of the urinary passages and voided in crystals which are always visible under the field of the microscope and oftentimes to the eye alone.

This condition is called gravel, and is one of the most distressing complaints that the physician has to deal with. The cause of these crystals being thrown down is, that there is too much concentration of the urine, it becomes too heavy in the organic constituents and as most frequently met with in general practice, is composed of uric acid and is the red sand which quickly forms around the sides of the vessel in which it is voided. Those suffering from a gouty diathesis, especially when aided by a sedentary life and high living, are more likely to have this disease, though I have met with it in every condition of life.

According to Keyes the symptoms are as follows:

"This pain (of the back) is deep seated and is felt over the kidneys, usually unilateral, often extending around the side following the course of the ureters, sometimes continuing on and into the testicle, oftentimes complicated by bladder symptoms, of stone in the bladder or of chronic cystitis of the neck. The pain varies in intensity and is usually made worse by fatigue. Oftentimes the patient cannot lie upon the affected side in the bed. The pain is usually a dull, deep ache, occasionally sharp, darting,

more good in this short time than I have received heretofore in all my treatment by a number of physicians, some of whom stand very high in the profession."

One of the remarkable features of this case was the fact that nothing else was used but thialion, that all the depressing symptoms passed away and of course the crying spells with them.

Since this time the improvement has been steady and though the case from start to finish has been an unpromising one, still I am satisfied a cure is certain.

URIC ACID IN THE BLOOD. WHAT DOES IT LEAD TO AND HOW CAN WE ELIMINATE IT?

BY GEORGE E. LEMMER, M. D., SECRETARY DANBURY MEDICAL SOCIETY, DANBURY, CONN.

Read before the Danbury Medical Society, Oct. 12, 1898.

(Reprinted from *The New England Medical Monthly*).

We will open this paper by advancing two propositions which I think are safely within the line of present pathological and chemical research, and with your patient indulgence, will then endeavor to justify them.

Is not the major proportion of diseases that afflict man due, either to errors in the kinds of foods taken, to excess in their use, or to imperfect oxidation, assimilation and excretion?

Does not a large percentage of such diseases tend directly of themselves to shorten life, and does not the remainder lead indirectly to the same melancholy end, by lowering in individual cases, the inherent power of resistance to the action of the germs and ptomaines of contagious and infectious diseases, and the shock and exhaustion following injuries?

We have lived beyond the time when the pain of passing through an attack of gout or rheumatic arthritis was in no small degree mitigated by the reflection, that after all he who dances should gracefully bend to remunerate the piper who played; and by the pleasing thought of the many good things yet to be devoured and the smothering thereof, in the liquid fruit of the side-board.

The obverse of the picture—the etiological and pathological perfection of to-day—enables us to catch the shadow of the slow but certain arterial atheromate, with its resulting hopeless structural changes, that follows in the train of the high liver.

In the man of simple and normal habit, the great toxine resulting from nitrogenous oxidation, uric acid, is thrown off as fast as secreted by the kidneys in the form of the soluble triple urates of potassium, sodium and ammonia; but in the subjects given to gastronomic excess, oxidation and excretion are almost always defective, hence we find the blood and lymphatic system loaded ever with the pernicious results of imperfect intestinal kidney and liver metabolism, with the subsequent accumulation in the blood and tissues of the insoluble urates and free uric acid.

Taking the mortality due directly to the presence of this effete principle in the system as in gout, rheumatism, organic cardiac lesions, including coronary sclerosis renal and hepatic disorders and apoplexy, and thereto adding the deaths occurring during the course of the ordinary self-limited diseases, wherein the fatality is in consequence of vitiated vital force, or is due to pre-existing gastric disorder, the result of past excess. May not the conclusion be fairly drawn, that as many men die to-day because of error and excess at table, as perish from both hunger and alcoholic indulgence?

The parts of the body where begins the primary formation of uric acid, are by no means agreed upon by observers, but we gather as the weight of evidence, first, that

the chemical metamorphosis ever going forward in the body tissues does not result in its secretion; second, that the liver secretes, if at all, a much smaller amount than was but recently supposed, the uric acid found here and believed to be due to hepatic activity, being really the result of defective metabolism of that already secreted, and finally that the kidneys really secrete if not all, by far the larger proportions.

Referring to this point of primary secretion, Luff holds that a "functional affection of the kidney always precedes gouty manifestations, and that this functional lesion which may be started by various agents and causes, viz., excessive indulgence in nitrogenous foods, wine and beer—the toxic effect of lead and violent mental shock or physical injury, may subside on the removal of the exciting cause, or it may pass on to a structural lesion of the granular type."

It is generally admitted that uric acid is always found in the blood of subjects afflicted with renal disease; and frequently in those never suspected of having had gout, post mortem examination reveals the presence of urate deposit within the kidney.

Davis, Jr., writing on general atheromata of gouty subjects refers pointedly to the atheromatous changes throughout the kidneys, and Sajous points in addition to the gradual progress of the renal disease, the "organ being affected in spots with intermissions in the degenerative changes which are microscopically small until finally large areas are involved." "In these cases," he continues, "the glomeruli and tubules are attacked in a way at times to cause scarcely an appreciable symptomatology, whereas similar changes coming on suddenly, as in the case of a different etiology would cause striking clinical and urinary manifestations."

With reference to the happy result that follows many times, the giving of a full dose of calomel in cases of minor symptoms of uric acid poisoning, it must be remembered that alterations in the metabolism of the liver, affect the excretion and elimination of this toxine in the healthy subject, and as variations in hepatic chemistry depend on manner and amount of food taken, on variety and extent of exercise and on certain nervous influences, it can be readily understood why liver trouble frequently accompanies gouty dyspepsia. May not the fact be thus explained, why some observers, failing to dissociate the two, attribute to the liver the primary formation of uric acid?

But, however authorities may disagree as to whether or no it is secreted entirely by the kidneys, or whether its abnormal secretion and precipitation in the blood and tissues be due to excessive use of nitrogenous food, to amylaceous dyspepsia, to the acute febrile conditions, to excess in various alcoholics;—or whether the large amount thrown off under treatment be due to accumulation from past defective excretion, the cardinal fact remains proven that the presence in the blood and tissues of this poisonous result of food oxidation or sub-oxidation, is pregnant with a group of disorders far-reaching and grave beyond the belief of observers of a decade ago.

Many diseases and a multitude of symptoms of heretofore unknown pathology and speculative causation, are now recognized as occurring only under the condition of excessive uric acidity. And if no further injury were done than that accompanying the gouty diathesis, rheumatism and urinary calculi, all of which have for long been recognized as due to this toxine, the suffering to be endured and lives shortened in consequence, would rank this baneful compound as one of the potent allies of the grim wielder of the scythe and sand-glass. The cumulative results, however, of research along this line, bear evidence to the startling fact that the uric acid diathesis in its causative relation to human mortality, may be classed as a twin factor with the bacillus of tuberculosis.

The major harm to the system from uric acid excess seems to rest on its peculiar power of distributing the peripheral arterial supply.

The entire principle of nutrition and excretion depends, for its normal working on the uniformity of arterial tension and free and unobstructed capillary circulation. Oxygen taken up during inspiration in quantities, however generous, is of value as a conservator of life, only in so far as its imbibition is followed by uniform distribution to individual tissue cells; therefore any impediment to the normal capillary ebb and flow,

led to believe it does, it follows that uric acid really dominates the function, nutrition, and structure of the human body to an extent which has never yet been dreamed of in our philosophy, and in place of affecting the structure of a few comparatively insignificant fibrous tissues, in which it is found after death, it may really direct the development, life history and final decay and dissolution, of every tissue from the most important nerve centers and the most active glands, to the matrix of the nails and the structure of the skin and hair."

Treatment: The underlying principle here seems to be as clear as is the condition treated—complex. It depends for its success first, on the reduction of the acidity of the body fluids to the degree of slight urinary alkalinity, thereby rendering soluble the accumulated insoluble toxine; and second on the stimulation of the excretory functions of kidneys, liver and skin.

This apparently simple solution of our intricate problem excludes of course those cases in which degenerative changes have already taken place, and even here it does apply in varying degrees short of actual repair of damage done.

Reference need scarcely be made to the utility and in many cases the necessity of augmenting hepatic excretion by regular persistent muscular exercise, nor to the beneficial results of stimulating perspiratory action, by increased personal hygiene, frequent baths and massage.

As to table discipline it may be safely stated, that for the subject in whom structural changes are impending there must be an almost total exclusion from the diet of the albuminoids or nitrogenous foods, of acids, and of alcohol in every form, until frequent urinary analysis bears evidence to the fact, that the urates and free uric acid that were excreted in large amounts on the beginning of the treatment, have been reduced to about the amount normally thrown off in health.

For the multitude of subjects not advanced to the point of tissue lesion, and embracing that large class where positive and permanently satisfactory results may be confidently looked for, the use of red meats in moderation is not only allowable but is advised; it being understood that the initial treatment be pushed to the point of clearing the system of acid accumulation and excess, followed for a variable period by medication decided enough to keep the urine faintly acid.

In all recent cases coming under my care I have found thialion so prompt and reliable in meeting the issue, that I have come to prescribe little else in the way of drugs. Its physiological properties of rapid urinary alkalinity, increased diuresis and catharsis, have been attended by a no less marked and satisfactory disappearance of the indications calling for its exhibition, as the following few cases demonstrate:

Thomas B., saloon keeper, age 42, weight 230; came to the office a few weeks ago in the evening, badly frightened because of an attack of vertigo of three days' duration, felt like falling over if he tried to read, had frontal pain and "throbbing of blood in his ears"—had also severe muscular pains along left side and leg, bowels constipated, and stomach in wretched form. Prescribed thialion, two teaspoonfuls in goblet of hot water on retiring, same double dose to be taken before breakfast on following day, after which one teaspoonful before each meal until I saw him again. Called on the third day feeling all right—bowels were moving rather freely; ordered medicine stopped for two days, then continued until bottle was finished, taking one teaspoonful a day on rising from bed. All right in a week's time. No return.

James E., hatter, aged 52, weight 192. Called about three months ago, complaining of feeling sore all over, but more particularly about the head—felt heavy, dull ache all the time—could not remember things ordinarily easy to recall, had not eaten a fair meal in over two weeks—was sure he was in for typhoid fever or some other serious illness. About a year ago I had treated him for subacute rheumatism. Prescribed thialion, two teaspoonfuls for first dose, then one teaspoonful in tumblerful of hot water before eating, for two days, stop for a day, then one dose before breakfast for remainder of the week; met him on the street two weeks later, said he had never felt better—he had used about two-thirds of his bottle.

...aged 42 years, weight 207. Called some five months ago, with aches in the lumbar region and stiffness in legs—frequently during rainy weather, very little mental effort—had for some time previous been—had grown so irritable and “nervous”—was unable to do his work for himself and family; was of clean habits, did not smoke or drink. Prescribed thialion in two teaspoonful doses, before each meal. After a course of four or five cathartics, then one dose before breakfast for a day or two if the bowels grew too free. Took two bottles of thialion. The patient reports that the symptoms have disappeared; says he feels in condition to fight for a

DISCUSSION.

...the discussion said: “Mr. President I am very glad to say with this subject because, as you all know, I have been one of the first to call the attention of the profession to its value in chronic lead poisoning. I want to compliment Dr. Lemmer on his exhaustive paper, which presents to our mind a most vivid picture which will be of great help to many a day. To those who have not given the subject of chronic lead poisoning the particular attention, this paper will clear up many points, and will raise questions as to whether the pathology of some of the diseases which have been difficult to treat in the past has not been wrong and if we will not find some of the problems that are constantly presenting themselves as to the cause and cure disease. One of the most prominent errors that have been made in connection with the uric acid diathesis, is, that when we have an excess it is due to an excess of uric acid production, while, as a matter of fact, it is due to tardy and inefficient elimination. The more we study this question the more we become convinced of the fact that this poison when not eliminated, aggravates all diseases and is the cause and origin of many. Investigators are demonstrating this fact every day. Dr. Hamilton Kibbee, of New York City recently cited the following case which illustrates the value of thialion as used with advantage in paralysis, due to lead poisoning, though, I think it is the first to call the attention of the profession to its value in chronic lead poisoning. The doctor relates that Mr. S. P., a painter, forty-three years of age, married, consulted him in reference to an existing paralysis of the middle and ring finger of the right hand, due to lead poisoning of long standing. The case had been treated by electricity, with strychnine and various ways by many different doctors with no result. About twelve weeks ago, he commenced treating him with teaspoonful of thialion, giving it three times a day, in a cupful of hot water. This was continued for five weeks when the dose was diminished to one-half a teaspoonful in the morning for six weeks longer. In his letter of September 29th, the doctor says, he has the full use of his fingers and is able to attend to his business as a painter. If this treatment was used, there can be no question but that the elimination of lead poison was effected by this remedy, and if it was, an important question arises whether or not this man did not suffer from an excess of uric acid in the blood, as in chronic lead poisoning, for if he did, it is an easy matter for us to understand how the remedy acted so quickly and the cure was so easily effected. I hold in my hand a letter, written by Dr. Hamilton Kibbee, a distinguished physician of Chicago, Illinois, who describes the case of his son who suffered from chronic disease of the kidney, also another one from the same source dated the 13th of October, both of which I have the author's permission to read to you. The doctor in his letters makes some remarks as to the cause of Bright's disease, which will prove interesting to you. The doctor says: ‘Fully expecting to be surprised by the results I ordered four ounces of thialion for use in my son's case. My son was twenty-three years of age, who was taken with albuminuria, about this ago while at work in Chicago. For several weeks he was under the treatment of Dr. Purdy, the distinguished specialist and author of note on diseases of

the kidney. By the advice of Dr. Purdy, I finally brought him home, where he has remained, improving in general health greatly by proper diet and rest. I have battled with this case with all a father's anxiety, and have grasped at everything which offered hope, but nothing has ever relieved the uremic symptoms like thialion. Its action has given me the greatest encouragement. His most troublesome symptoms were flushing of the face, congestion of the eyes, pulsation of the temporal arteries and beating of the heart against the chest wall. There was great restlessness and sleeplessness, throwing himself over the bed and moaning. The urine was sometimes (usually) profuse, specific gravity 1010 and it contained always about one-fourth of one per cent. albumin. Urea by Doremus test was less than 500 grains in 24 hours. If he exercised it brought on pulsation with increased arterial tension and dizziness. I began the thialion about fifteen days ago and within three days I could see improvement. His flushed face has disappeared and his eyes are now normal. For the first few days he had pulsations, but they lasted only about half an hour and for the past three days he has had no pulsations whatever and he says he feels better than he has for a year. I cannot tell you how thankful and hopeful these results have made me, I tremble lest the benefit shall be only apparent and not real.

The boy was morose, despondent and hopeless, now he is his natural self again.

I believe we are all wrong about the treatment of interstitial nephritis. I don't believe the albumin tests are of much value. The thing to keep the finger on is the test for urea, Doremus test the best. The excretion of urea is the barometer that indicates improvement or contrary. I think that excess of urea is the cause of the nephritis and the local trouble in the kidney is due to excessive uric acid in the blood. From the fact that almost all cases of interstitial nephritis occur in brain workers, who exercise their brains to excess, I am inclined to believe that the cause of uric acid in the blood is due to brain lesion, something involving the transmission of nerve influence or causing interference with natural normal nerve vibration. Good results from the use of static current to the brain have been reported by Dr. Neiswinger, of Chicago, and my theory is that in these cases normal vibration is restored to the nerve structure of the brain by the electric current and this will account for Dr. Neiswinger's result in the treatment of interstitial nephritis. But get rid of the urea. There can be no question but that this is the first and most urgent requirement, while the second thing would be to stop (by electricity or in any manner) the excessive accumulation of uric acid. That thialion will get rid of the urea I have demonstrated.

This letter was written on the 9th of September, one month and three days from that date the doctor writes: 'My son has continued to improve up to Friday of last week, when he started to spend the winter with his brother, Dr. Kent V. Kibbee, Professor of Chemistry in the Medical Department of Fort Worth University, of Fort Worth, Texas. For two weeks previous to his departure he had no flush, headache, or other symptoms connected with his kidney trouble and his urine in every respect was perfectly normal even to excretion of urea. Though he suffered from a painful jaw, as the result of the extraction of an ulcerated tooth, he had no nervous symptoms and insisted upon making the trip. He left here on Thursday and St. Louis on Friday morning, reaching Fort Worth on Saturday night. I had a letter from his brother, who visited us in October last and he informs me that the boy got to Fort Worth in good order and that he is greatly surprised at the improvement in his condition since he saw him last in October.'

Dr. Kibbee's words convey to us information which ought to prove valuable, certainly the results are remarkable.

The trouble is that we have been growing more and more a gouty people, due to the fact, largely, that meat being cheap with us, we eat it in excess. The profession has long been looking for a reliable remedy to combat the multitude of ills directly traceable to an accumulation of uric acid in the blood, one which when ingested will convert the insoluble phosphates, oxalates and urates into a soluble compound which can be readily eliminated. This subject confronts the general practitioner daily as he goes

hardly a day without a severe attack of rheumatism, and he has an invaluable agent for gout. I have found it was a stone in the right kidney and some of us brought it out. My belief is that the stone has dissolved. I am able to do work that two years ago I could not do. I believe that stone was dissolved in the years I was treated by thialion. I have recently alone."

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PURULENT TUBERCULOSIS AND RHEUMATIC HIP-JOINT DISEASE.

BY A. M. PHELPS, M. D., NEW YORK.

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(Reprinted from the *Peoria Medical Journal* for December, 1898.)

The profession at the present time recognizes various forms of joint diseases, but by far the most common is the tubercular and purulent. The next most common joint disease is due to a rheumatic condition. In this brief paper I desire to call the attention of the profession to a few points in the etiology, pathology, symptoms and treatment. Tubercular joints begin insidiously, progress slowly and cover over periods of months or even years, and result in the formation of tubercular abscesses or extensive destruction of bone by caries. Other joints are frequently affected secondarily by metastasis. Purulent joints are characterized by the sudden onset of the disease and great pain. The disease progressing rapidly and virulently, the destruction of bone extension and the formation of abscess follows very soon after the attack. This condition of the joint is nothing more or less than a rapid osteomyelitis. In both of these affections a single joint is usually attacked; whereas in joint disease due to rheumatic condition several joints are affected at once. Then we may safely conclude that single joint disease is almost invariably tubercular or purulent. Tubercular and purulent joints are always local and have nothing to do whatever with a general constitutional disease. Whereas rheumatism, syphilis and other constitutional diseases may produce local joint disease. But several joints are usually diseased when caused by constitutional conditions.

ETIOLOGY OF TUBERCULAR AND PURULENT JOINTS.

Undoubtedly these diseases must be preceded by a localized inflammation. Into this area of inflammation are inoculated the germs which produce the destructive changes. That these diseases are a manifestation of a "constitutional taint," I think is incorrect; that it is a localized focus of disease, I believe. To illustrate: Germ life, to grow and produce its destructive changes, must have a soil fit for its reception and nutrition, and it is only within the area of the active process of repair in which large masses of embryonic cell tissue are present that we find such a soil excepting in the lymphatic glands. Unless there is a lesion of an inflammatory nature in any portion of the body, these germs cannot find a foothold for their growth. For example, an incised wound is made, we watch it closely and find that the first process that takes place is an effusion of blood and coagulation; then a rapid wandering of cells into this blood clot occurs, and rapid cell proliferation. These cells rapidly form themselves into line between the cut ends of the tissues for the purpose of repair. Soon organization takes place, loops of capillaries are thrown out and new tissue is built up. After this, contraction begins to take place; the capillaries are destroyed, the epithelium grows over the surface of the wound, and the wound is healed. This, I believe to be the normal process of repair. *This is inflammation*, and this is as normal as the growth of the stag's horn. This reparative inflammation is necessary in all cases where injury has been inflicted. If at any time during this process of repair or normal inflammation, germs are inoculated into this new inflammatory tissue, another condition is at once established. If these germs are streptococci or some one of the pyogenic germs, they at once seize upon this new inflammatory material, and they with their ptomaines destroy it. In this case inoculation has taken place and we say that the wound has become infected, and disease is the result. *This disease is suppuration*. If the germs of tuberculosis should be inoculated growth takes place immediately, but it is very

HOW DO PYOGENIC AND TUBERCULAR GERMS ENTER THE CIRCULATION PRIMARILY?

Through the lymphatic system as a rule. A child playing in the back yard of a tenement house, in an atmosphere contaminated by germ life caused by the old woman beating the carpets from an infected room, where an individual has died from tuberculosis or osteomyelitis, inhales the spores of the germ.

These spores are immediately absorbed by the lymphatics from the mucous membrane of the pharynx and the trachea and carried to the neighboring lymphatic glands.

The lymphatic glands are rich with cells and are a good soil for the reception and growth of the germs. The cells or phagocytes of the lymphatic glands are at once attacked by the germs and destroyed, until the entire gland is converted into a pus or tubercular cavity, depending upon the kind of germ absorbed. These are the large glands seen in the necks of children and called by the older authors, "strumous or scrofulous gland." Ulceration now commences in the gland, burrowing takes place in the direction of least resistance. The gland is surrounded by a vascular net work of veins and arteries. When perforation of the gland takes place from ulceration, its contents may discharge directly into a vein, thus it can be readily seen how the circulation becomes contaminated with germ life from the reservoir which is constantly discharging into it. Now if the child playing in the back yard receives a slight injury of a joint at once inflammatory action begins at the point of lesion already described. The blood being loaded with germs of infection carries them to the point of injury. The pathogenic germs finding a fit soil for their reception and growth attack the normal new inflammatory material and convert it into a *diseased condition*, with a formation of pus or a tubercular abscess. From this point of local infection the pathogenic germs find their way into adjacent tissues destroying them as they advance and enlarging the diseased area. Should the head of the bone be involved it soon is destroyed, and the diseased cavity discharges into the joint infecting all the tissues involved in the structure of the joint. If the diseased focus is in the soft parts, the joint becomes infected in the same manner, and the bone is secondarily involved. The entire joint now being involved, the same processes which took place in the lymphatic gland are observed in the joint, viz., ulceration, burrowing and the formation of tubercular or pus cavities, together with destruction of all tissues lying in contact with the disease, by infection. Burrowing always takes place in the direction of least resistance, which accounts for abscesses appearing at different points in joints apparently similarly affected.

Before considering the treatment of tubercular and purulent joints, I desire to say a word in regard to rheumatic conditions affecting joints.

RHEUMATIC JOINTS

Are always due to a constitutional condition. They are usually multiple and single; a joint is never involved excepting it is preceded by an injury. Therefore the treatment of rheumatic joints requires in addition to the mechanical and operative, constitutional treatment. Nine times out of ten, allow me to say, when a single joint is involved, a rheumatic condition has nothing at all to do with it. The mechanical treatment in rheumatic joints, is of just as much importance as in tubercular and purulent joints. In the old man or woman with a rheumatic diathesis is frequently seen a diseased hip, unquestionably rheumatic. Such cases should immediately be put into bed with a weight and pulley varying from twelve to twenty pounds, after which follow the methods employed in tubercular and purulent joints. (See mechanical treatment.)

In all rheumatic cases the alkaline treatment is prescribed, which frequently is very disappointing. During the past year, in all cases of rheumatic joints, I have been using a new salt of lithia, combined with alkalies, known as "thialion." This is a laxative salt, and when used carefully and faithfully, has proved in my hands one of the best agents in these rheumatic affections.

My method of administration is as follows: I direct that a teaspoonful of this granulated salt be dissolved in a cup of hot water and drunk as warm as possible (in acute cases) taken every three hours until very free catharsis is produced.

This is accomplished, by choline acting very freely on the liver, producing a marked flow of bile into the intestines, as well as increasing the peristaltic action of the bowels.

After this result is produced the dose is then lessened to once or twice a day until the urine approaches the point of alkalinity, which generally takes place about the third day, then once a day until cure is effected.

In chronic cases a despoofol taken in the same medium morning and night, always before meals, for a week and then once a day on rising, for a week longer, produces the happiest results.

THE EARLY SYMPTOMS OF HIP-JOINT DISEASE AND TREATMENT.

Before considering the early symptoms of hip-joint disease, I would like to call attention briefly to a few facts which are observed clinically. Joints attacked by inflammation, either intra or extra capsular, have a condition of rigidity or spasm of the muscles about them. This is due to irritation of the terminal nerve planes in the area of disease, transmitted through the reflex centers. The muscles operating upon the joint which are supplied by a nerve given off from a common nerve trunk (one branch distributed to the area of the disease, the other to the muscle), are affected by spasm, while the other muscles may remain quiescent. That muscles affected by spasm will rapidly atrophy is well known. These facts are observed particularly in inflammation of the knee-joint. The knee joint is supplied posteriorly by branches from the great sciatic nerve. The patella is supplied by nerves given off from the anterior crural and obturator. When inflammation attacks the condyles, flexion and rapid atrophy always take place, but in patella disease, or disease located anteriorly, the limb remains in the straight position, owing to the fact that the reflexes are distributed through the anterior crural and obturator and not through the great sciatic. Assuming that these propositions are correct, and clinical observations seem to demonstrate them, we must at once conclude that rigidity of the muscles from spasm, producing a limit of motion, would be the first symptom observed in any joint disease. Limit of motion due to spasm of muscles in any joint produces deformity. We would designate as the second most common early symptom in joint disease, deformity. This limit of motion and deformity produces a limp. So I think we can safely say that limit of motion, deformity and limp are nearly always, if not always, present in hip-joint in the early stages. There are in general joint diseases eight cardinal symptoms two or more of which are always present. These cardinal symptoms are pain, heat, swelling, pain on joint pressure, limited motion, spasm of the muscles, atrophy and deformity. Each joint has super-added to these eight cardinal symptoms other special symptoms. These special symptoms are due to the anatomical characteristics of the joint. In hip-joint disease pain is not always a common symptom; rise of temperature, owing to the depth of the joint, is hardly perceptible; swelling is not seen until effusion or dislocation takes place; pain on joint pressure is present only in intra capsular disease, located between or near the articular surfaces. Limited motion, spasm of the muscle, limp and deformity, with apparent lengthening or real shortening, are nearly always seen associated together. Atrophy pretty constantly occurs, especially in bone diseases, and it may occur as early as the tenth day. The other symptoms observed in the early stages are night cries, pain in the knee, flattening of the buttock, partial or complete obliteration of the gluteal fold.

When the limb is in a straight position the muscles accurately balances it, but when the limb becomes flexed, the action of these muscles is changed in proportion to the amount of flexion. If these muscles are in a condition of excitability or spasm from reflex irritation, one can easily see how various deformities can take place depending entirely upon the position of the limb when the muscles act. When this great mass of muscles is affected by spasm, which is always the case in inflammation, one can readily see how limit of motion and deformity, to a greater or less extent, must be the earliest symptoms observed.

Before the American Orthopædic Association, I presented a model, together with several dissections which I had made of the joints, for the purpose of demonstrating why the limb assumes certain positions, with occasional exceptions, when the hip-joint is inflamed. The capsule of the normal joint is twisted around the head and neck in such a manner that when the limb is in the straight position, great tension is exerted upon the joint through the capsule and its other ligaments. Now, when the joint or capsule becomes inflamed, the patient invariably places his limb in a slightly flexed and abducted position to relieve tension, and changes altogether the action of the muscles; they, being in a condition of spasm, together with the voluntary act, produce the deformity of the first and second stage of the disease. When flexion takes place just a little further, the action of the muscles is entirely changed; abductors become inward rotators; outward rotators become to a certain extent, abductors, etc., etc. Resistance not being offered to the adductor muscles, the limb, by their contraction, passes over to the deformity of the third stage of hip-joint disease, that is, adduction flexion and inward rotation. There are exceptions to these deformities, which I have designated as erratic, but they will not be considered now.

These deformities take place whether disease is intra capsular or extra capsular, whether there is effusion into the joints or not; and let me say here that only a limited number of cases have effusion into the joints in the early stages. To conclude, the importance of symptoms, I believe, speaking generally, occur about in the following order:

1. Limit of motion.
2. Deformity, with apparent lengthening or real shortening.
3. Limp.
4. Atrophy (bone disease)
5. Pain in the knee (with absence of knee-joint disease).
6. Pain on joint pressure.
7. Night cries, in absence of other joint disease.
8. Flattening of buttock, with change in gluteal fold.
9. Heat.
10. Swelling.

The order of these symptoms might be transposed a little by some authors, but this order will answer for diagnostic purposes.

TREATMENT.

The treatment of hip-joint disease is divided into the operative and mechanical. *In all cases where abscesses are present they should be immediately evacuated. This enables the surgeon to intelligently explore the diseased joint with his finger and ascertain to what extent the disease has progressed.* If the head of the bone is separated from the neck it should be removed together, with the great trochanter and the neck. The acetabulum, if diseased should be thoroughly curetted, together with any other diseased tissue that may be found in the joint. If only small points of disease are found within the joint, those should be curetted together with whatever diseased tissue exists within the joint, and the cavity washed out with bichloride solution, 1 to 2,000. The joints should now be filled with a solution of iodoform and glycerine, one-half ounce of iodoform to four of hot glycerine. After this has been done the patient should be put in bed, with extension in the line of deformity and lateral traction above the knee, amounting to about three pounds. Day by day the limb should be lowered, until the deformity is overcome. When the deformity is overcome the lateral traction fixation splint which I devised and use in the Post-Graduate School should be adjusted, and the patient put on crutches with a high shoe on the well leg. Pus and tubercular material destroy living tissues, and when joints are allowed to macerate for weeks and months in these materials, which now seem to be the favorite method of many of our orthopædic surgeons, extensive destruction of bone will almost surely follow from infection. In many cases extensive cutting of muscles, tendons and fascia may be

necessary to overcome the deformity. The reader will see, then, that we believe that deformities should be first overcome and all abscesses opened before the mechanical work begins. *No case of hip-joint disease need recover with angular deformity*, and to secure and attain this end steps should be taken at the commencement of treatment to place the limb parallel, after which the lateral traction splint, already alluded to, will prevent the patient from becoming again deformed.

MECHANICAL TREATMENT.

For many years the profession have been taught that the long traction splint used by Sayre, Taylor, and others, was the proper machine to use. The patient is allowed

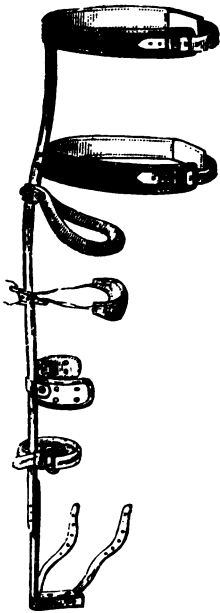


Fig. 2.—The Cheap Dispensary Splint.

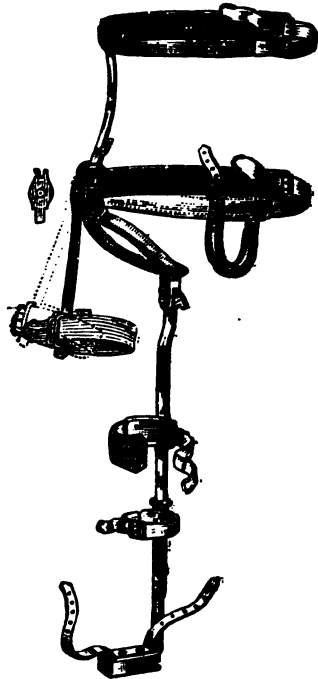


Fig. 3.—Inside Bar and Lateral Traction.

to walk upon this splint, using it as a perineal crutch. The splint stops at the trochanter and exerts no power over the joint, on that account, to fix it. The patient, stepping upon this splint with a strap around the perineum, causes trauma of the joint while walking and nearly every splint that I have seen adjusted allows the patient to put his toe upon the ground, which, of course, drives the head of the bone into the acetabulum each time the patient steps. This pumping of the head of the bone backwards and forwards into the acetabulum at the rate of 2,000 times an hour each day as Dr. Ridlow has so aptly expressed it, as the child runs, accounts for the disastrous results which we see published from institutions where this splint is used. Angular deformity, which produces shortening, nearly always results from the use of this splint.

The statistics published by Shaffer and Lovett, in the *New York Medical Journal*, from the 59th Street Orthopedic Dispensary, in thirty-nine cases reported on in a series of many hundreds:

Ankylosis.....19
Slight Motion..... 6

—
25

Motion from 10 degrees..... 7
Motion to right angle..... 3
Motion free 3



No. 4.—The Patient, Splint, Adjustable High Shoe and Crutch.

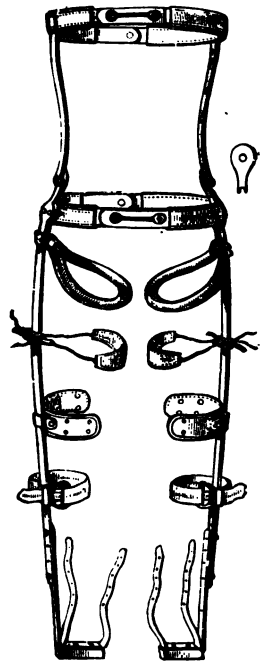


Fig. 5.—The Double Dispensary Splint.

The three with free motion were treated during the first stage of the disease, two were under three years old. There were only two cases without shortening. The splint used was the long traction, which I have already described—one which admits of free motion at the hip-joint and the patient is allowed to walk upon it. This splint was devised during a time when it was believed that fixation would produce ankylosis of the joint, and that motion was necessary to keep up the nutrition of the joint. It is needless to say that we have outgrown both of those ideas. The statistics of Cham-

bers Street Hospital of fifty consecutive fractures of the elbow joint show only one case of ankylosis. These patients were fixed in plaster of Paris for many weeks, without passive motion. In the Post-Graduate Hospital School, we fix our cases of hip-joints



Fig. 6.



Fig. 7.

from one to five years without motion, with the lateral traction fixation splint, and in our long series of cases not one has resulted in bony ankylosis, excepting cases with great destruction of bone, and where we have had control of the patients they have

ered, practically, without angular deformity. Fig. 7 shows range of motion after fixed sixteen months absolutely in plaster of Paris bed, perfect motion regained. This one case demonstrates that sixteen months of absolute locking up of hip-joint will not produce ankylosis. Swelling is seen in this long series of cases only from non-development of the bone and extensive bone destruction. The accompanying cuts and description will give a very accurate idea of the splint we use in our treatment after the deformity has been overcome in bed. Tissue inflamed or diseased should be put at rest to allow the normal process of repair to take place without the trauma of motion. This is the law. It is applied in the treatment of the iris, fractures, sprains, and any tissue that can be immobilized. To meet the requirements of this law so far as possible, I was led to devise the splint illustrated in this article.

To fix the hip-joint, a splint must extend from the foot to the axilla (see Figs. 4 and 6).

Fig. 4 represents the perineal crutch, the abduction bar adjustable by means of a key, for the purpose of making lateral extension. The steel bar is adjusted by a steel ring which makes a firm crutch, the pressure coming on the tuberosity of the ischium. Adhesive straps, extending from the body from the ankle, furnish means of extension by tightly buckling to the straps, the ring furnishing over-extension. The rod ending in the ring, prevents flexion and extension of legs. The splint is intended to prevent every motion at the hip-joint, and at the same time apply extension in a line with the neck of the femur. Fig. 4 shows the crutch and splint adjusted, the patient in crutches, and standing upon a high stool upon the well leg.

In this splint I found a little too expensive and expensive work. I then constructed a splint (Figs. 2 and 6), which simply does without the extension joint and key. A glance at the cuts will convey the idea. Figs. 2, 3, 4 and 6 are the single and Fig. 5 is the double splint for double hip disease. Fig. 5 is the cheap outside bar splint, and the one I now use in all cases. The device is a bar of steel, extending from the



Fig. 8.

foot of the axilla, accurately bent to fit the body. A tracing made on paper by laying the child on it will assist in shaping the bar. A pelvic belt, a thoracic belt, and a steel perineal ring complete the fixation part of the splint. The straps in the foot-piece buckle to adhesive straps attached to the leg, which make longitudinal traction. The strap lashes the leg to the splint, making lateral traction precisely as the abduction bar acts in Fig. 3.

An ordinary blacksmith can construct this splint.

Fig. 8 is the double hip splint adjusted. Fig. 9. The writer's hemostatic forceps useful in working in cavities and fibrous tissue. The jaws are serated and will hold. Being blunt pointed, the ligature will slip over the end and not tie on the forceps.

Before these or any other splint is adjusted, however, the patient should be treated in bed until deformity is overcome and the active stage of the disease somewhat modified.

To conclude, my observations led me to believe that the most serious element of destruction in hip-joint disease is the trauma and pressure produced by the spasm of the muscle; the fixation of the joint without extension is an impossibility; but the successful treatment of the joint must depend upon its absolute immobilization, which can only be produced by proper extension and fixation; that the constitutional treat-

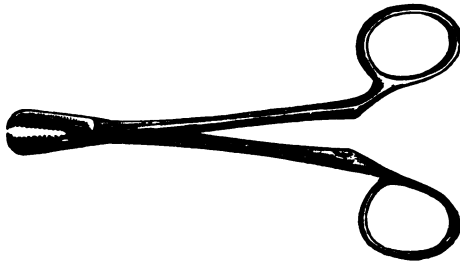


Fig. 9.

ment of hip-joint disease amounts to but little, independent of mechanical treatment; that mechanics is everything; that *extension in a line with the axis of the shaft and deformity alone, in hip-joint disease, is entirely wrong, that extension should be made in a line parallel to the axis of the neck—in other words, two lines of extension*;—otherwise the idea of extension is not perfectly carried out; that ankylosis of the joint is not produced by immobilization, but by the severity and character of the inflammation and subsequent cicatricial contraction about the joints; that the long traction hip-splints in general use neither properly extend nor immobilize the joints; that intra-articular pressure results in the destruction of the joint or ankylosis in a large percentage of cases is proven by statistics; that the results in hip-joint disease should be as good as those of knee joint disease, and will be, provided perfect immobilization can be carried out; that patients should never be allowed to step upon any portative apparatus; that a high shoe on the well leg and crutches should be insisted upon until the patient is cured; finally, that the angular deformity seen in cured cases should not occur, and such cases are a standing rebuke to the splint and methods employed. In other words, no patient with hip-joint disease need ever recover with angular deformity. In exceptional neglected cases of dislocation a slight amount of deformity had better be left than resort to osteotomy

PREPARATION OF THE PATIENT FOR ABDOMINAL OPERATIONS.

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(Reprinted from the *Charlotte Medical Journal*, Charlotte, N. C., for Dec., 1898.)

The importance of careful preparation of the patient when operations within the abdominal cavity are about to be done is universally admitted, yet it often falls short of the actual requirement, because insufficient time is allowed, and because essential features are disregarded. Something more is necessary than the clearing out of the intestinal tract and examination of the urine to exclude albumen and sugar. When practicable, where immediate operation is not demanded, from one to three weeks at least should be consumed in getting the patient in condition.

Careful preparation will lessen the shock of exposure of the peritoneal cavity, minimize the unpleasant effect of the anesthetic and render the convalescence smoother. It will also facilitate the work of the surgeon by overcoming intestinal distention, enabling him to do better work in a shorter time and will materially lessen the mortality following abdominal operations.

A careful examination of the heart, lungs and kidneys will decide if an operation is permissible and what anesthetic is to be preferred. All things considered, chloroform is to be preferred in abdominal operations when there is no actual contra-indication, both on account of its greater safety, when properly administered, and because it causes less disturbance of the digestive tract. When the Trendelenburg position is employed it is certainly to be preferred. Not infrequently a bad heart which before would positively forbid both anesthesia and operation will be so much strengthened and improved by proper preparatory treatment as to permit an operation if it can be rapidly executed. This is particularly true of women of advanced age, whose digestive apparatus and excretory organs are apt to be inactive or impaired.

It is particularly important to establish a normal functioning activity of the excretory organs, and the digestive apparatus must perform its work properly. To this end we must first ascertain in what respect these organs are deficient and to what extent they digress from the normal standard. Therefore daily examinations of the urine in particular should be made to determine the average voided in 24 hours, its specific gravity and the presence or absence of albumen, sugar and bile. Something near the normal standard must be attained before operation, and the exclusion of bile from the urine is quite as important as to exclude albumen and sugar.

The presence of bile in the urine* indicates an improper action of the liver and that the bile is being absorbed into the circulation and eliminated by the kidneys instead of being discharged into the intestinal tract. Bile is the great intestinal anti-septic and prevents fermentation, hence its absence in the intestinal tract in normal quantity permits fermentation and the result is intestinal indigestion and gaseous distention. The importance of an active condition of the liver is recognized by most operators but the administration of a dose of calomel a day or two preceding operation is not sufficient in the majority of cases.

The advantage of repeated examinations of the urine to exclude albumen, sugar and bile is evident since it is well known that specimens vary from day to day and even the same day before and after the ingestion of food. Therefore daily examinations of the urine extending over a period of a week or more is necessary, and these examinations should record the daily average quantity excreted, its specific gravity, its chemical reaction upon tests for the above named substances, and the result of microscopical

* A rough test for bile in the urine is to boil a small quantity (about 3 ij) in a test tube and add a few drops of pure nitric acid when if bile is present the specimen changes color and becomes brown, a deep reddish brown.

examination for casts and epithelial scales. If after several microscopical examinations of different specimens no casts are found this part of the examination may be omitted afterwards.

It is impossible to unload the intestinal tract by one free purgation, particularly where the intestines are habitually inactive as is apt to be the case in conditions requiring abdominal operations, hence the importance of prolonged preparation. I have found an abundance of fecal matter in the intestines after apparently thorough evacuation extending over a period of several days, and no doubt other operators have had a similar experience.

For thoroughly clearing out the intestinal tract and establishing a proper functional activity of the liver preparatory for operation the following course has been found most satisfactory: Administer every third night at bed-time, at least four hours after the last meal of the day, two or three pills each containing two grains of a reliable extract of cascara and at the same time ten tablet triturations of calomel one-tenth of a grain each. The action of this dose is free from any unpleasant effect, and there is no griping. This is followed in the morning an hour before breakfast by a heaping teaspoonful of thialion (a laxative salt of lithia) in a cup of hot water. Every intervening night and morning a similar dose of thialion is given to maintain an active condition of the bowel which it does by exciting the flow of bile. There is no other drug the continuous administration of which acts so reliably and satisfactorily without deleterious effect. It may be continued for days producing two or three free evacuations each day without the least depression. It arrests fermentation not alone by discharging bile into the intestines but also by re-establishing a normal alkalinity of their contents, and at the same time it increases the secretion of urine and renders it alkaline.

When the cascara and calomel is no longer required (*and in most cases one dose is sufficient*), thialion is continued up to the day of operation, administering it either once or twice a day as required. It has an unpleasant flat taste in solution in hot water to counteract which a small piece of lemon peel may be dropped into the cup. It may be continued after the operation as soon as it is desirable to act upon the bowels, though at first larger or more frequently repeated doses may be required.

* While the bowels are being thus prepared and the liver rendered active attention must be given to the diet. It is best in most cases to limit the diet to food that will be digested in the stomach, such as meat, particularly lean beef and the white of egg carefully cooked, and to avoid such articles as will ferment readily, for instance, those containing starch, and vegetables. Bread and milk are particularly objectionable. The former because it contains starch and it is apt to ferment in the intestines. Then, too, the yeast ferment is not always destroyed by the process of baking. Bread can, however, be rendered fit for food in cases of impaired intestinal digestion by slicing it thin, trimming off the crust and placing it in the oven on a dish, and drying it thoroughly until it is deprived of all moisture and becomes crisp. Milk and any of its preparations are objectionable either before or following coeliotomy, chiefly because it ferments readily and creates distention. All kinds of sweets are positively prohibited for a similar reason.

It is important to have the intestinal tract free and the intestines collapsed at the time of operation—in fact, this is one of the chief aims of preparatory treatment—hence for two days preceding the operation the food should be of such character as to leave the least possible residue after the process of digestion and absorption. In some instances it is best to give liquid food only for the twenty-four hours immediately preceding, and this must be of a character not to cause the least disturbance of the digestive apparatus.

The condition of the skin also must receive attention, and to insure proper functional activity of the perspiratory glands, frequent baths followed by massage should be given during the time devoted to preparatory treatment. Every second day will be best in the majority of cases, and in enfeebled patients great care must be taken to avoid exhaustion and depression. The bath should be given *comfortably warm*, pre-

ferably at bed-time, because it induces refreshing sleep and there is less liability to exposure and cold following it. It is well to add about an ounce of lysol to the bath to soften the water and aid in cleansing the surface. The patient should remain completely immersed, except the head, for fully five or ten minutes, then the whole surface should be soaped well out of the water and scrubbed with a brush or mitten. When this process has been completed the surface is again immersed to remove the soap. The surface is now dried thoroughly and the patient is placed on a bed or couch between light blankets, and rubbed and massaged until the skin reacts thoroughly. In cases where reaction is tardy alcohol may be used, and when the skin is dry and poorly nourished coconut oil may be rubbed in. Afterwards the patient, according to individual preference, is either permitted to rest awhile comfortably between the blankets or is put to bed properly.

The evening before the operation the surface of the abdomen where the incision is to be made and for a considerable distance around is shaved, and when the incision is to be made below the level of the umbilicus the pubes and vulva are also shaved. A soap plaster made by spreading green soap on a folded pad of gauze is applied to the surface at least six inches on either side of the proposed incision. This is retained in place by strips of adhesive plaster and a bandage and remains over night. The following morning it is removed, the surface scrubbed with a brush and green soap and rinsed with water and afterwards with alcohol. Then a large pad of several layers of markasol gauze is applied and held in place by a bandage until the patient is placed on the operating table. When intra-pelvic abdominal surgery is to be done in the female the vagina and vulva must be shaved and thoroughly cleansed also. To accomplish this the vulva is scrubbed with brush and green soap and the vagina is scrubbed with soap also and a pledget of cotton or gauze in the grasp of long-handled dressing forceps. Afterwards the vagina and vulva are irrigated freely with a one per cent. solution of lysol to remove the soap and a vulva pad of markasol gauze is applied and held in place by a T binder.

Comparison of the results both during and following operation when this method of preparation has been fully carried out, with the same work done after more hasty and less careful preparation, will prove abundantly convincing.

IMPORTANT.

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